October 14, 1957

Paper Trade Journal

All About the World's Biggest Liner Board Fourdrinier at Jacksonville

How Swanee Puts on Paper Machine Fourdrinier Wire Patches That Stay

Deinking Mills Learned at the Falls Conference

Comparing Advantages of Different Pulpstone Types and Grinder Design

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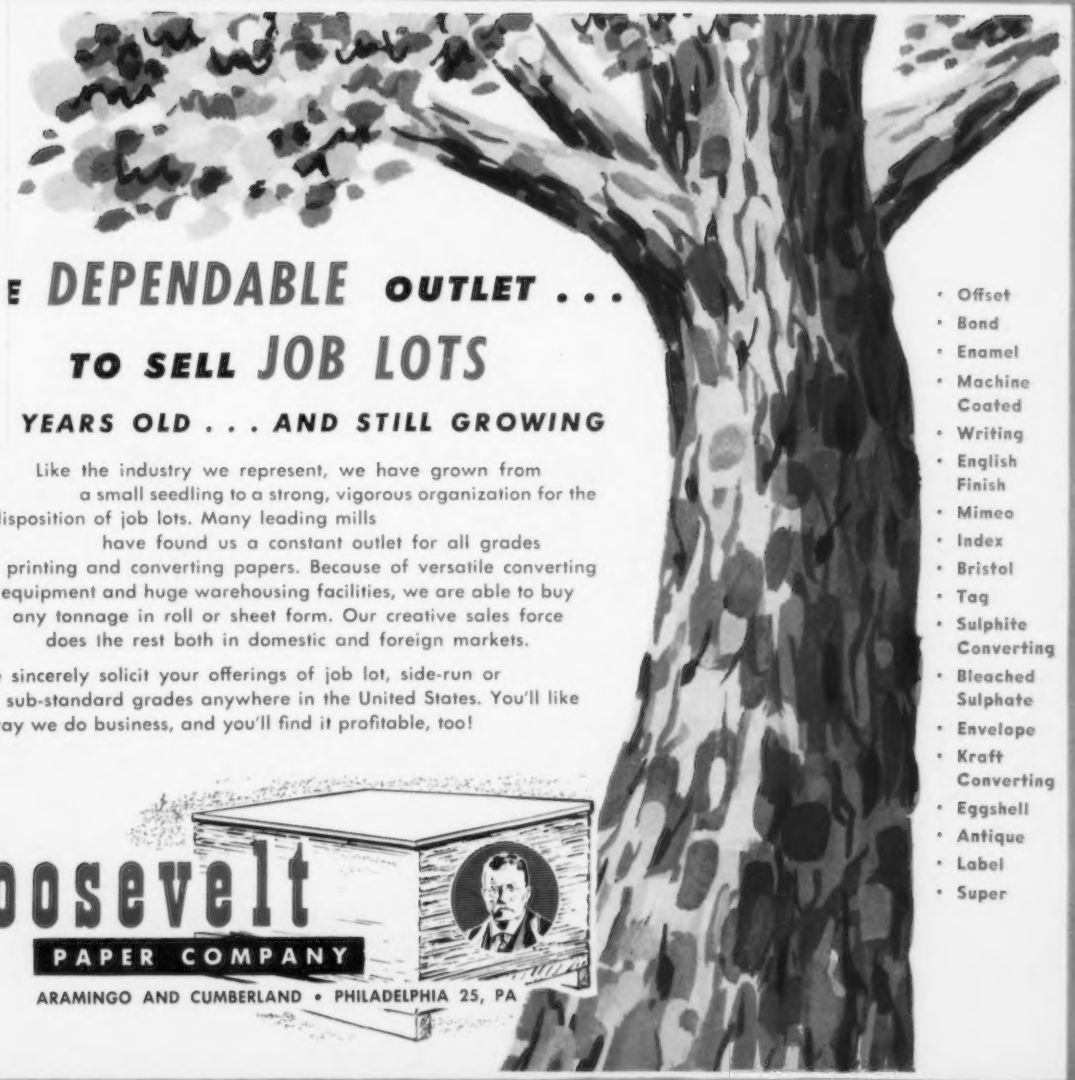

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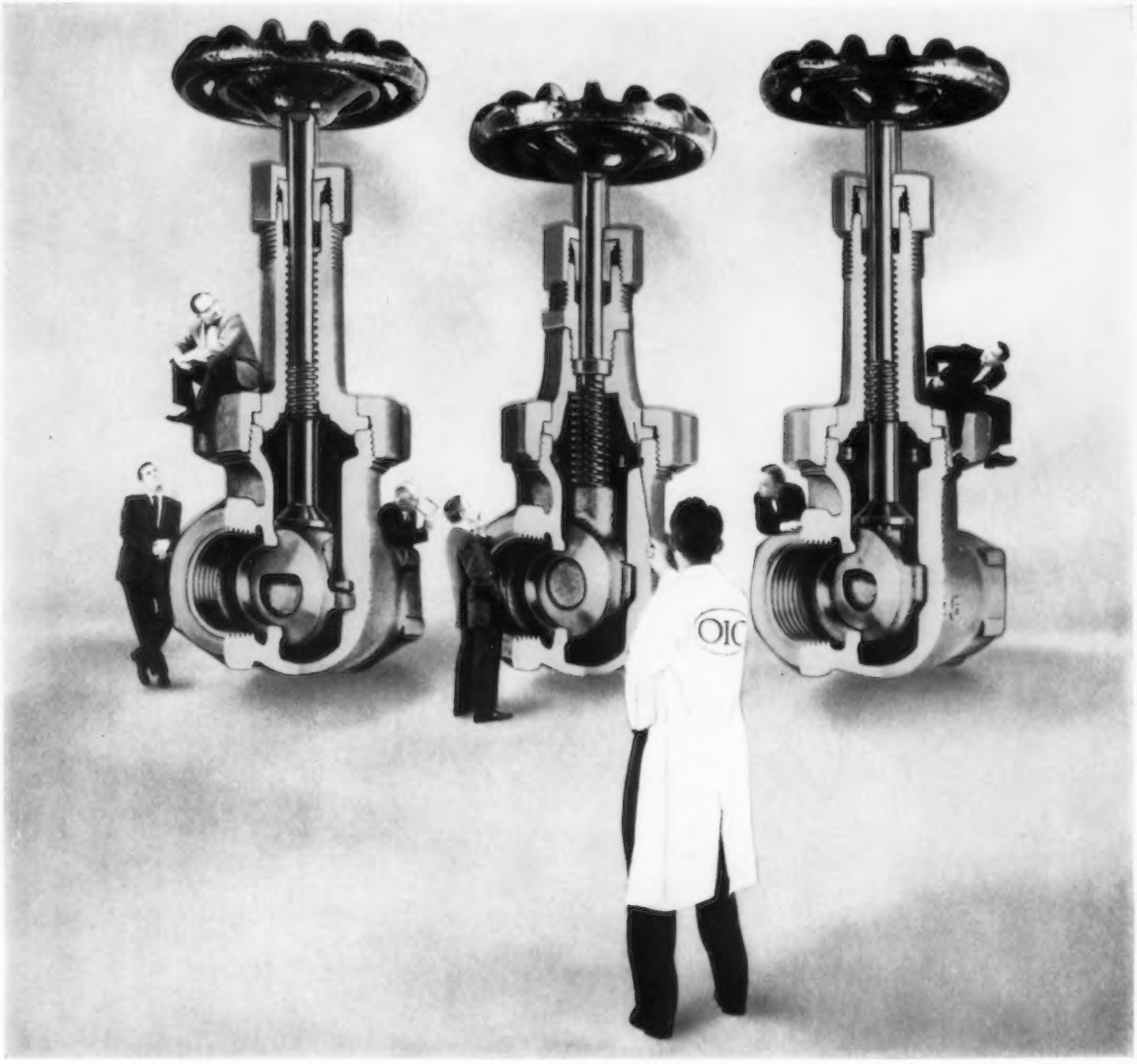

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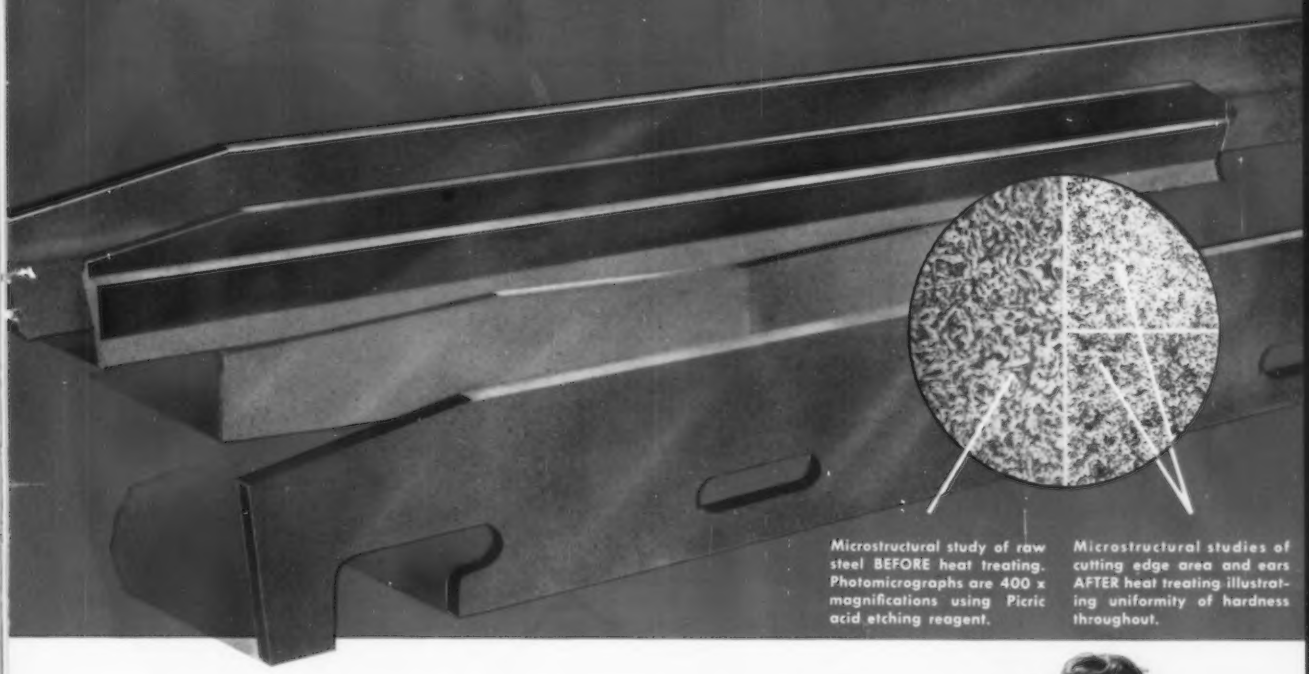

Microstructural study of raw steel BEFORE heat treating. Photomicrographs are 400 x magnifications using Picric acid etching reagent.

Microstructural studies of cutting edge area and ears AFTER heat treating illustrating uniformity of hardness throughout.

Regardless of the stock, consistency or pressure, MICROLYZED Fillings by BOLTON lead in providing what papermakers want most in Jordan Fillings . . .

LONG WEAR *because they are custom-processed from specified Jordan steel to a precise balance of hardness and toughness.*

EVEN WEAR OF PLUG AND SHELL KNIVES *because of guaranteed uniformity of hardness in each set of fillings and throughout each knife in the set.*

In the manufacture of Jordan Fillings, Bolton controls the entire process. Starting in the laboratory, a photomicrostructural analysis is made of each shipment of Jordan steel. Destructive mechanical properties tests are made, which must fall within the rigid tolerance standards established. During production, nondestructive tests assure the desired properties previously determined are achieved during heat treatment.

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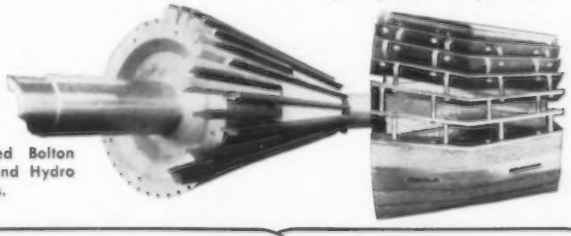
Fifty two years of specialized Jordan Fillings experience is built in to every knife. So is the craftsmen's attitude — an attitude of conviction that none will deliver longer, more economical, day in day out resistance to wear than BOLTON MICROLYZED FILLINGS . . . RING TYPE — WEDGELESS — HYDRO-TRUSS. *All are made by John W. Bolton & Sons, Inc., Lawrence, Mass.*



Partially assembled Bolton Wedgeless Plug and Hydro Truss Shell Fillings.

The Papermaker suggests:

Write today for Bulletin No. F-556 on Bolton Microlyzed Fillings. It has full information on:

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Published Weekly Since 1872

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TRENDS 37

NEWS BRIEFS

Charmin Cheyboygan to Start Up Soon 39
Eastex Buys Southland Cylinder Machine 39
Columbia Cellulose Moves Sales to Vancouver ... 39

FEATURE ARTICLES

St. Regis Starts Up World's Biggest Kraft Board Machine 48
Swanee Paper Gets Excellent Results on Wire Patching 59
What Are the Advantages of Different Pulp Stone and Grinder Designs? 62
Deinking Conference Another Big Success 70

PAPER PEOPLE 41
NEWS OF CONVERTERS 42
NEW EQUIPMENT AND SUPPLIES 44
NEW LITERATURE 58
PRICES OF FIBERS 76
FIGURES OF THE WEEK 78
PRICES OF MATERIALS 78
NEWS OF SUPPLIERS .. 80
OBITUARIES 81
CLASSIFIED ADVERTISING 88
ADVERTISERS INDEX .. 94

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NOV. 11-13: National Paperboard Assn. Annual Meeting at Waldorf-Astoria Hotel, New York City.

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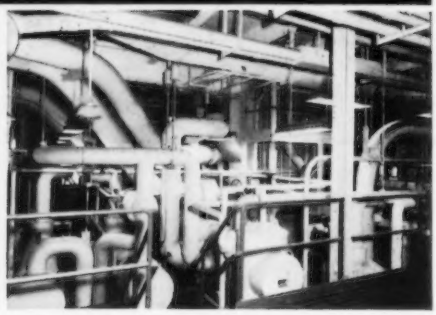

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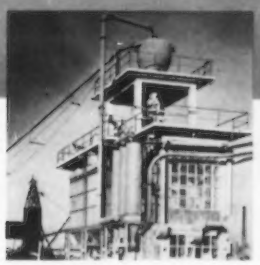

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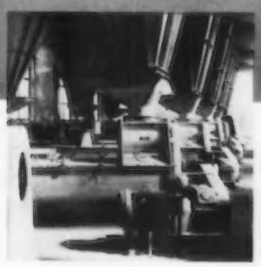

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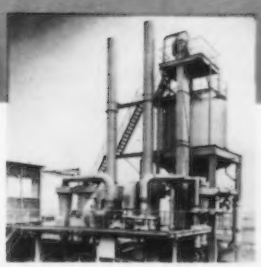

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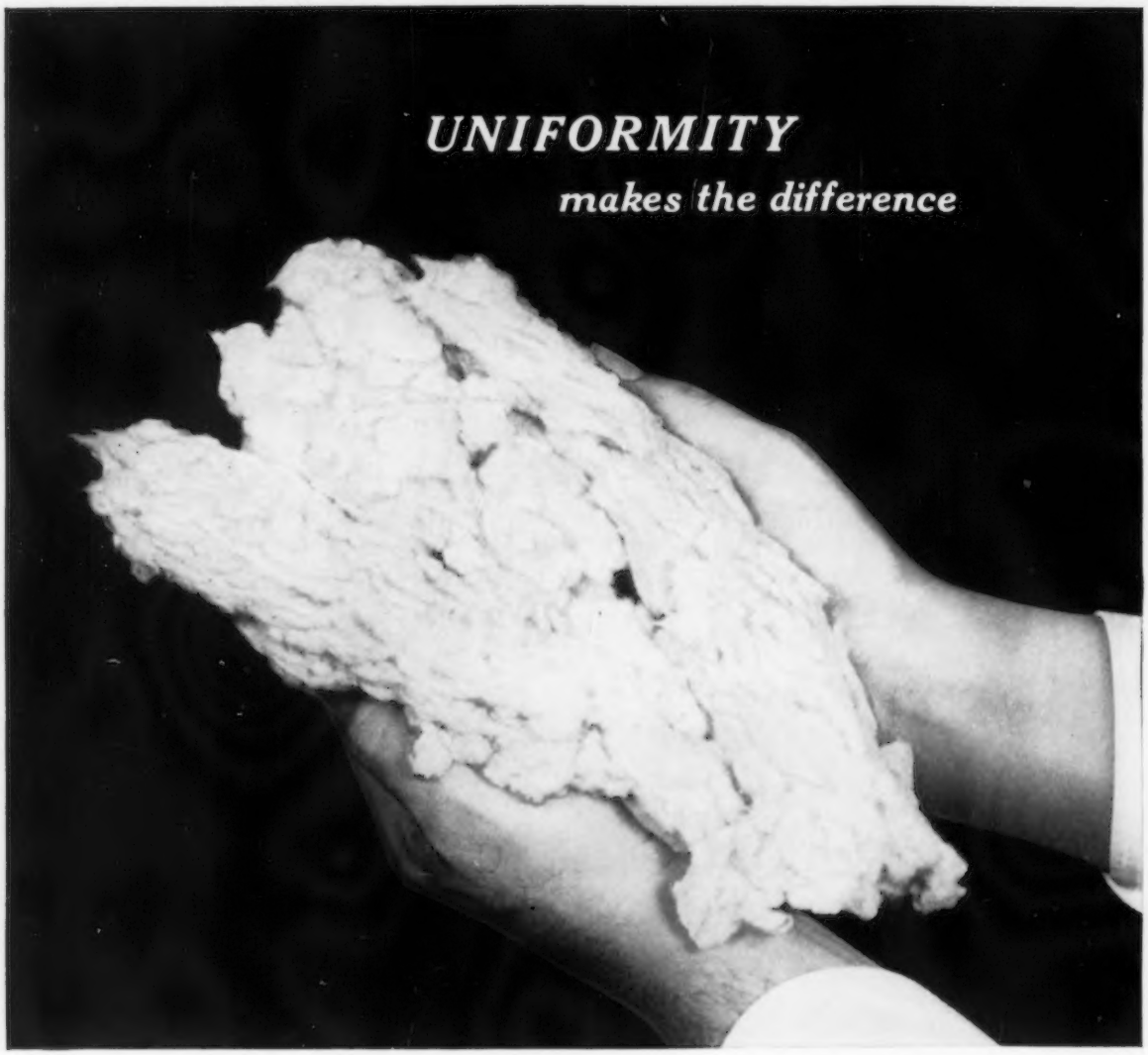

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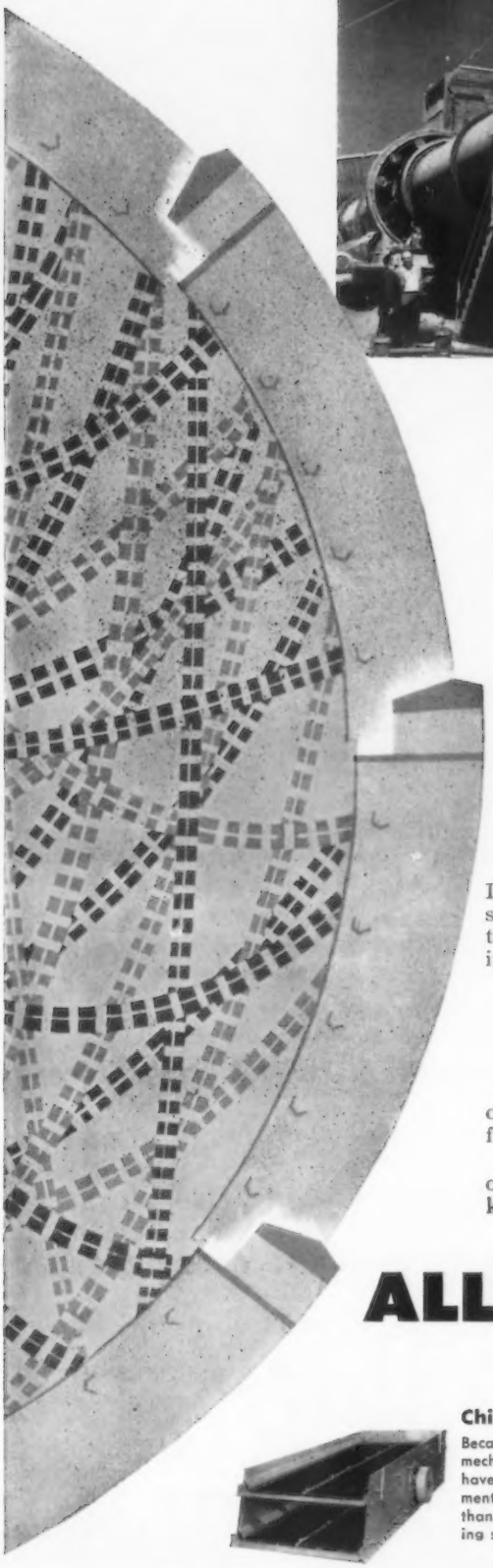

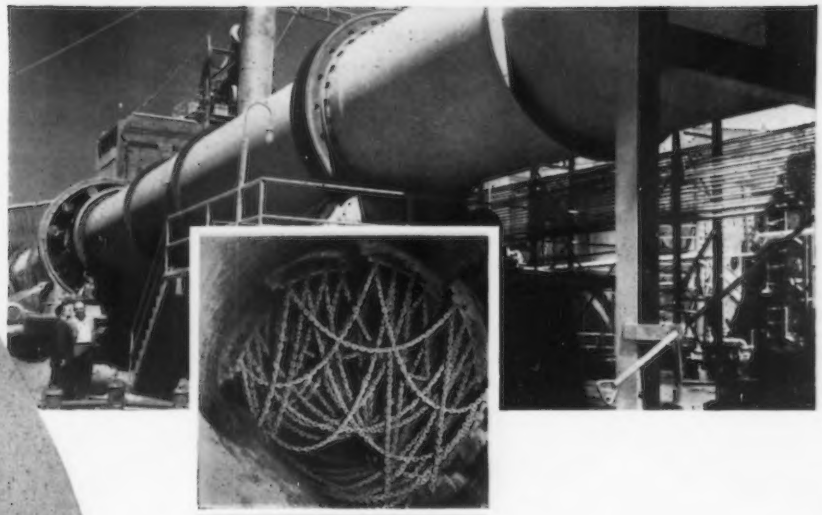

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speeds drying, cuts fuel costs, reduces dust loss in an ALLIS-CHALMERS LIME SLUDGE KILN

In the Allis-Chalmers lime sludge kiln, a designed maze of chains shackle heat to its job. With this patented heat recuperating system in the feed end of the kiln, accelerated drying is accomplished in three ways:

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2. By lifting material into path of hot gases.
3. By directing flow of gases over sludge bed under suspended chains.

By effectively capturing and channeling heat, the Allis-Chalmers chain arrangement provides a highly efficient method of cutting fuel requirements and reducing dust loss.

For complete information, see your nearby A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletins 07R7010 and 07B8565.

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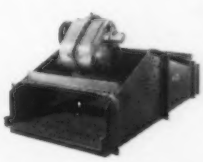
Ripl-Flo and *Low-Head* are Allis-Chalmers trademarks. A-5501

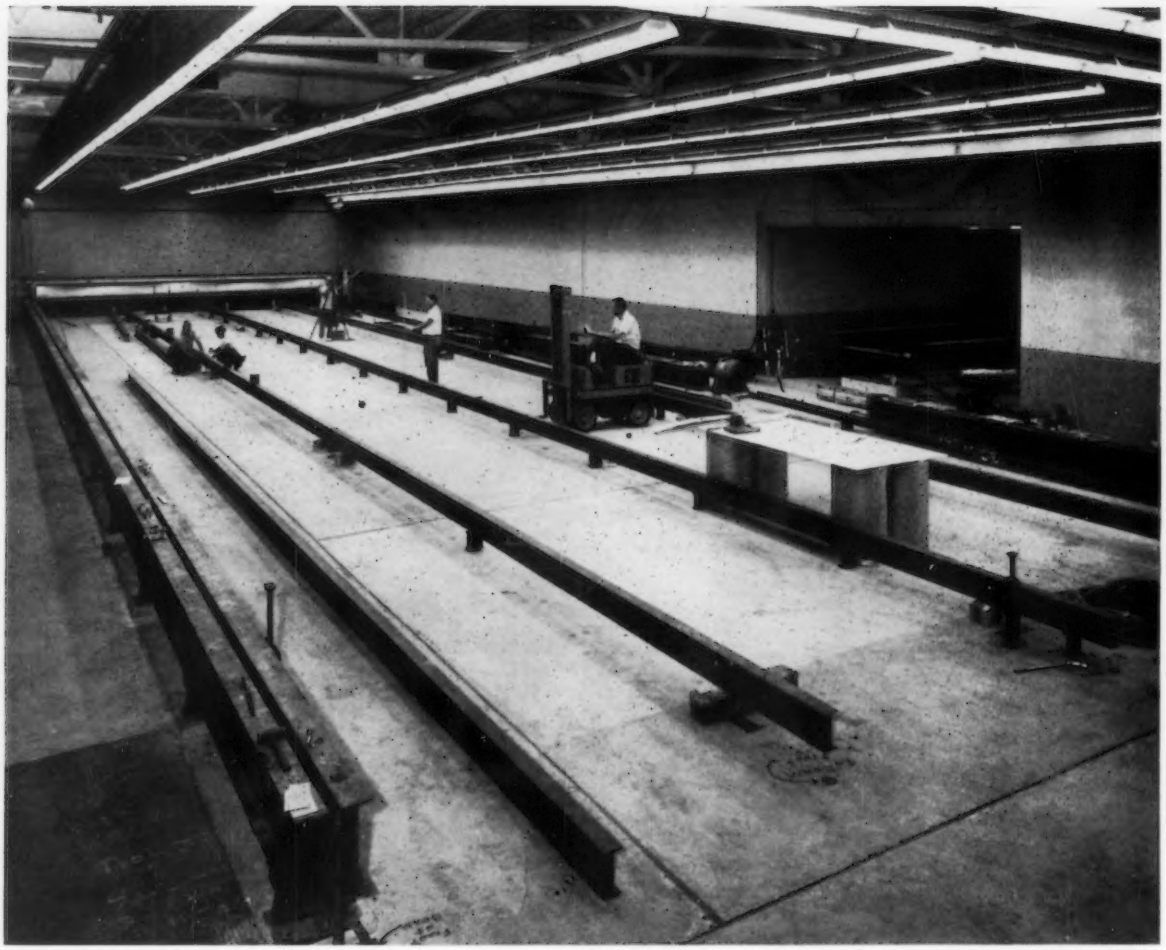
Chip Screens

Because of the two-bearing mechanism, *Ripl-Flo* screens have lower power requirements and less maintenance than conventional four-bearing screens.



Pulp Screens

Operating at high pulp consistencies, *Low-Head* pulp screens save water and power. Maintenance is simple. Mechanism may be removed as a unit.



This is an Appleton Finishing Table, under construction. Capable of finishing wires as wide as 408″ and up to 229′ in length, it started operating in September. Like all of the new, highly specialized equipment recently installed, it was designed by Appleton Wire Works engineers to meet the changing requirements of the paper industry. Appleton Wire Works, Inc. General Offices, Appleton, Wis. Plants at Appleton and Montgomery, Ala. International Wire Works, Menasha, Wis., an affiliated company.

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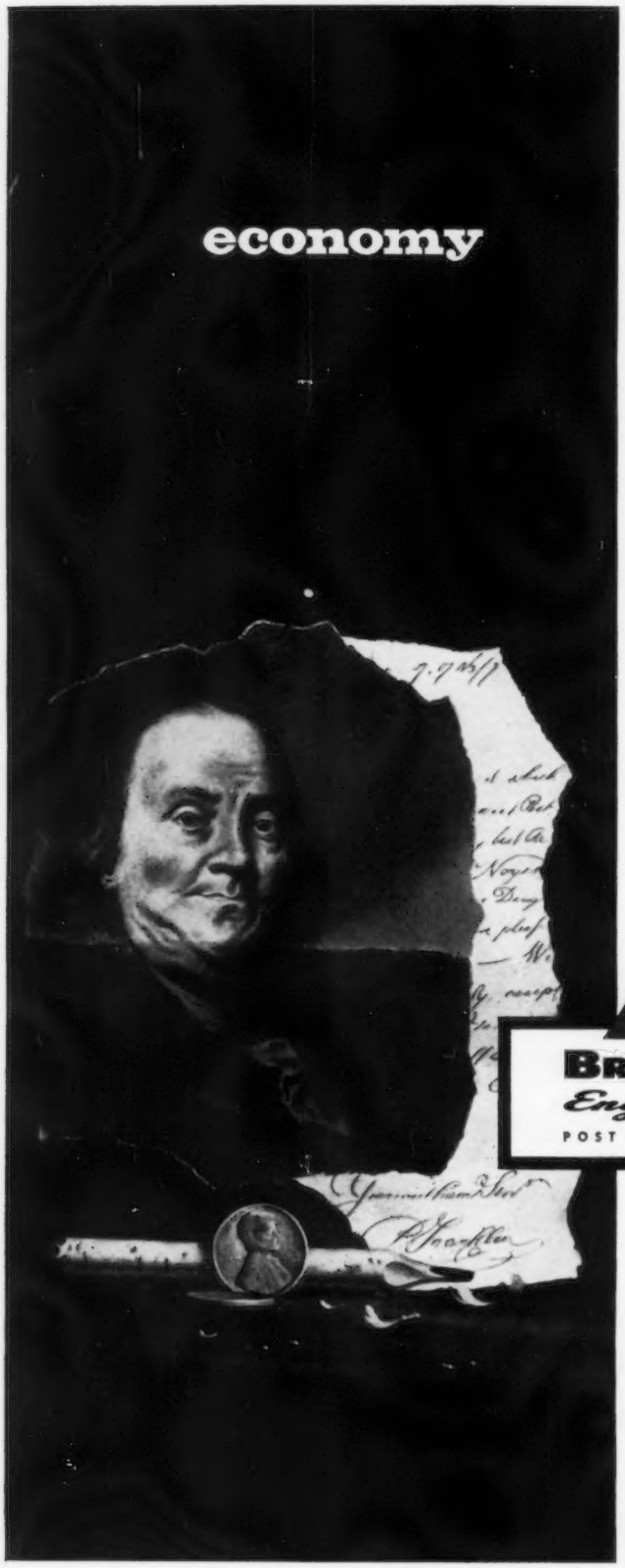

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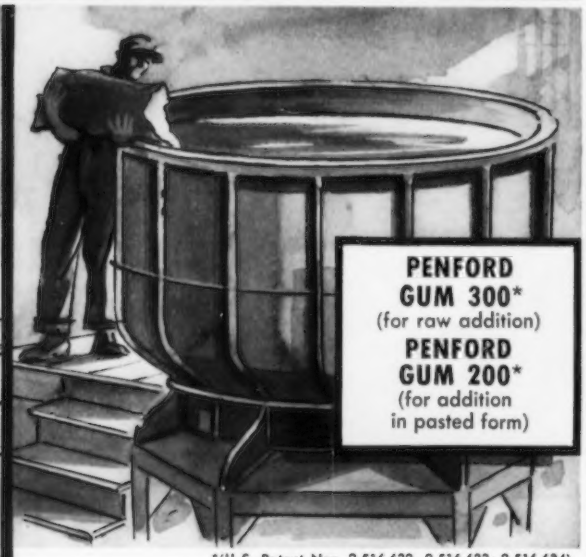

*(U.S. Patent Nos. 2,516,632; 2,516,633; 2,516,634)

Douglas Papermakers' Pearl Corn Starch, when employed in Penick & Ford's Precipitated process, complexes with high titre soaps and completely precipitates in acidic furnishes. The precipitate is in the form of a voluminous floc which assures 200-300% more retention than regular cooked starches. Improvement in sizing value, strengths, and retention of both fibrous and non-fibrous fines are realized. The Penick & Ford Precipitated Process may also be modified to be suitable for use in neutral or slightly alkaline furnishes. To be most effective, this product should be added to the furnish after all refining and before final dilution at the head box.

The higher substituted epoxy starches paste or gelatinize at 30-40°F. lower than regular starches. This lower gelatinization temperature eliminates the necessity for precooking before addition to the furnish. The improved filming properties, adhesive value, and extreme stability of the ethers insure higher sizing value than underivatized starches. For those mills equipped with cookers, the lower substituted and lesser expensive Penford Gum 200 may be cooked to a temperature of 165°F. and added to the furnish at the fan pump. Penford Gum 200 when cooked in batch or through automatic cookers represents most economic usage of hydroxy ethyl ether derivatives for furnish sizing.

Further information on the use of P & F starch products for wet end addition prior to sheet formation may be obtained by contacting our staff of Technical Sales Service Engineers.

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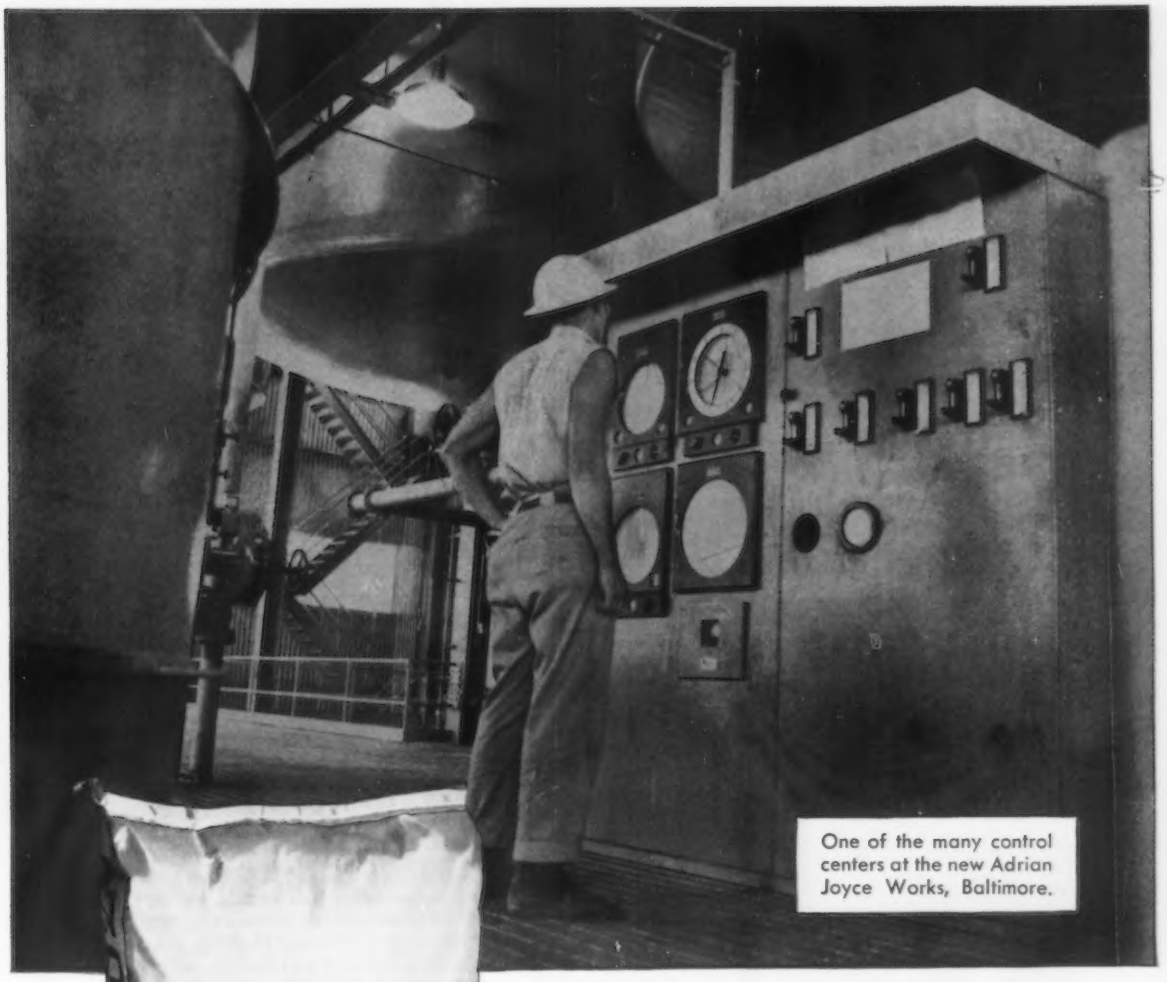

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Two Oliver Gravity Deckers double stock capacity and reduce white water consistency

diamond

. . . at Diamond Match Company, Ogdensburg, New York

Several views of two Oliver Gravity Deckers, each 4' in dia. x 13' face at Diamond Match Company, Ogdensburg, New York.

Prior to June 1957, the Diamond Match Company at Ogdensburg, New York, was utilizing five units for deckering approximately 80 TPD of conventional softwood groundwood. In May 1957, one of the two Oliver Gravity Deckers shown in the above photograph replaced all five of the smaller existing units and reduced the white water consistency. When both of the new Deckers are operating at full capacity the stock output in this totally enclosed system can be increased to 140 TPD.

Evaluation tests on the groundwood white water were conducted by the Diamond Match Company before and after the two Oliver Deckers were installed. The comparative results revealed the new Decker system had not only reduced the white water consistency from .093 to .082, but it also reduced the percentage of intermediate fibers (30, 50, & 100 mesh retainings) from 26.4% to 12.2%. These tests further revealed that the long fibers (14 mesh retained) were eliminated from the white water.

The new Oliver Decker installation at the Diamond Match Company is an excellent example of Dorr-Oliver's ability to provide equipment to fit the job. For more information on the complete line of Dorr-Oliver equipment for the pulp and paper industry, write Dorr-Oliver Incorporated, Barry Place, Stamford, Connecticut. Or better still let us send an engineer to discuss your equipment problem with you, placing at your disposal 35 years of D-O's filtration experience. No obligation, of course.

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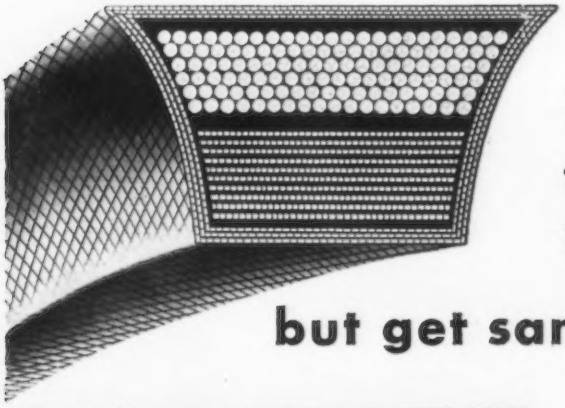
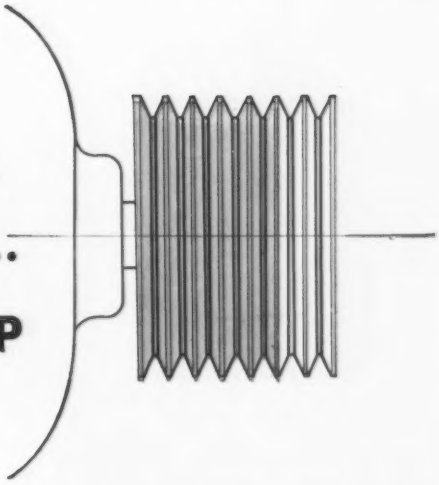
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

5 Gates Super Vulco Ropes do the work of 7 standard V-belts



Use fewer belts...

but get same HP

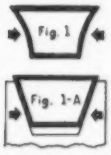


No other V-Belt has ALL these advantages

1. Flex-Weave Cover (U.S. Pat. 2519590)

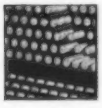
A Gates exclusive: provides greater flexibility with far less stress on fabric. Cover wears longer . . . increases belt life . . . more power available to driven machine.

2. Concave Sidewalls (U.S. Pat. 1813698)



Concave sides (Fig. 1) increase belt life. As belt bends, concave sidewalls become straight, making uniform contact with sheave groove (Fig. 1-A). Uniform contact means less wear on sides of belt . . . far longer belt life.

3. Tough, resilient Tensile Cords



Super strong resilient tensile cords provide 40% greater horsepower capacity . . . easily absorb heavy shock loads . . . reduce number of belts required save weight and space.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmospheres).

5. Oil, Heat, Weather Resistant

Special rubber compounds make Super Vulco Ropes highly resistant to heat, oil, and prolonged exposure to weather.

Cut sheave width and weight . . . design your drive to benefit from the greater HP capacity of Gates Super Vulco Ropes.

5 Gates Super Vulco Ropes will do the work of 7 Standard V-Belts. A Super Vulco Rope Drive delivers more HP per dollar invested than any standard V-Belt drive.

Sheaves with fewer grooves cost less . . . weigh less . . . occupy less space. Your drive design is improved.

Helpful drive data is quickly available to you. Simply call your nearby Gates distributor for advice from a Gates V-Belt Specialist. Stocks carried in industrial centers throughout the world.

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Denver, Colorado

TPA 264

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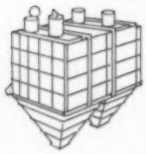
Gates Super V-ROPE Drives

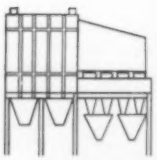
How to tame a dust collection problem

Look for the 'hidden' factors that deliver important *extra efficiency*, like the exclusive Shave-off in Buell Cyclones that harnesses the double-eddy currents to trap an extra percentage of dust. Side-entry of gases, Buell-designed manifolds, proper proportioning, extra-heavy-plate construction provide even more efficiency. Send for the ready reference booklet, "The Collection and Recovery of Industrial Dusts". Dept. 49-J, Buell Engineering Company, Inc., 70 Pine Street, New York 5, New York

BUELL CYCLONE



"SF" ELECTRIC PRECIPITATOR



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Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**

Designed and Built by Bauer...

the newest in

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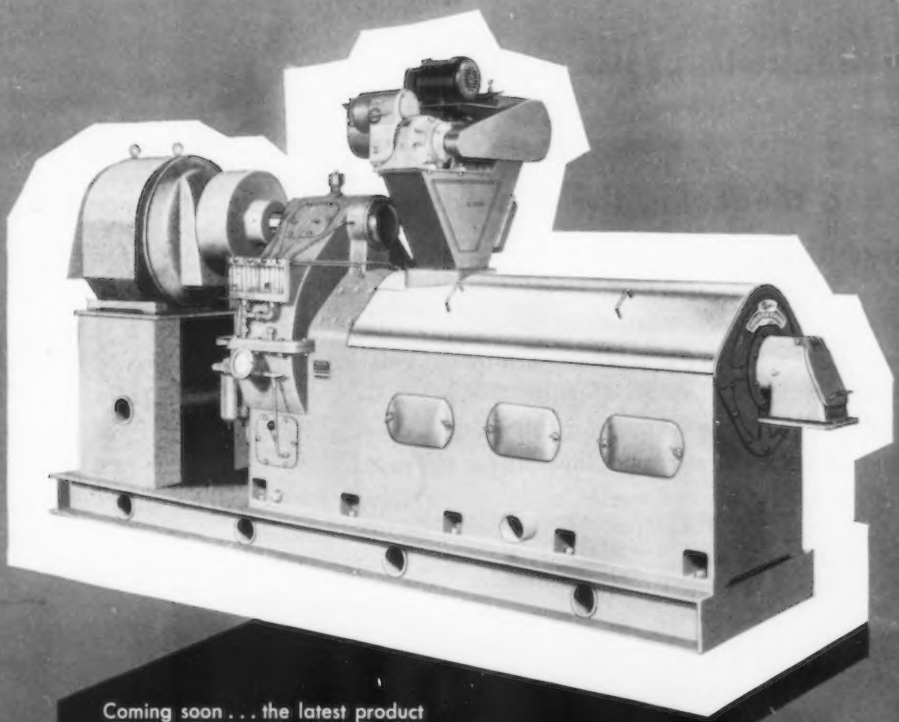

Coming soon . . . the latest product of Bauer research . . . designed for high production, increased efficiency and for lower operating costs in liquor recovery, fiberizing and a mild steaming effect with chips.

Ask for complete information.

Bauer

THE BAUER BROS. CO.
1758 SHERIDAN AVE.
SPRINGFIELD, OHIO

Now you can use your HARDWOODS to make groundwood-type pulp

. . . and bleaching these pulps with Du Pont Peroxides can give them brightness levels in the range of 70-75 G.E.

Recently several mills started commercial operation of a process to produce pulp by the defiberation of hardwood chips. This new method can also be used for the production of pulp from softwood chips and for the utilization of sawmill wastes.

Early in the development of this process advancement, Du Pont carried out extensive laboratory and field tests to determine the bleachability of these new pulps. It was found that most hardwood species can be bleached to a brightness range of 70-75 G.E. with the use of peroxide alone or a hypochlorite treatment followed by peroxide bleaching. As would be expected, bleaching with peroxide produced a pulp with high color stability.

We invite you to use Du Pont's bleaching experience with these new groundwood-type pulps. Just contact our nearest technical representative and he will be glad to assist you. He can arrange for a thorough bleaching evaluation of your pulp in our laboratory or in your plant.

NEW YORK & BOSTON AREA	Call C. R. Lombard New York, LOngacre 3-6440
MIDWEST AREA	Call P. E. Kiefer Chicago, INdependence 3-7250
WEST COAST AREA	Call L. W. Blight Portland, CApitol 7-1281
SOUTHERN AREA	Call Charlotte, FRanklin 5-5561

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BETTER THINGS FOR BETTER LIVING
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ELECTROCHEMICALS DEPARTMENT
Peroxygen Products Division

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For Reburning Lime Sludge

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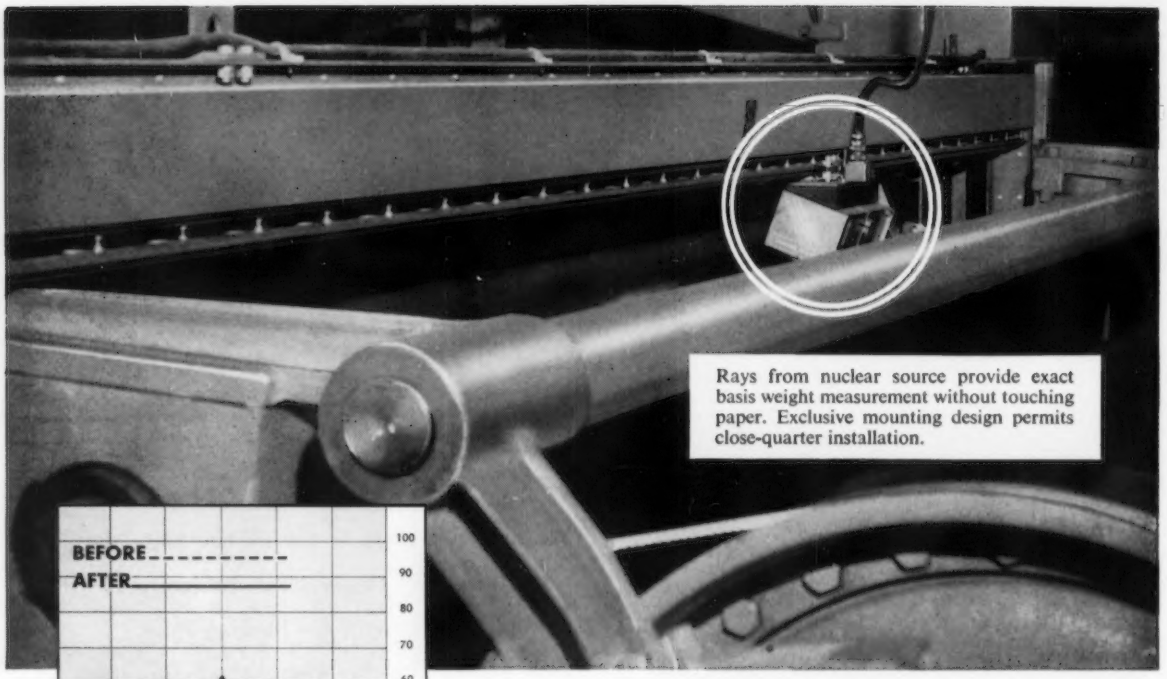
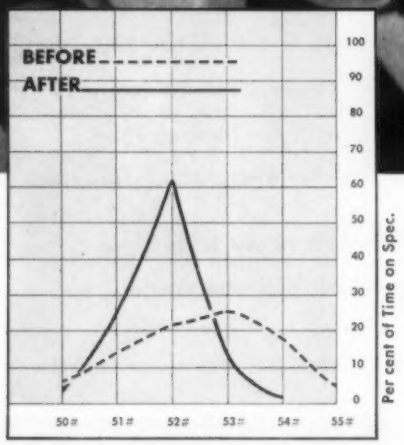


Rays from nuclear source provide exact basis weight measurement without touching paper. Exclusive mounting design permits close-quarter installation.



BEFORE, when hand weighed tear sheets are used for control, production can vary beyond tolerance.

AFTER installation of Curtiss-Wright System, uniformity sharply increases.

Operator sets target weight selector on control panel. Profile and machine direction variations are presented on separate wet end recorders for machine tender's convenience.

Curtiss-Wright Control System

Maintains Accurate Basis Weight Production for P. H. Glatfelter Co.

The P. H. Glatfelter Company of Spring Grove, Pa., produces up to 450 tons per day of fine grade paper. To insure continuous quality and maintain peak production levels on their newest fourdrinier, this leading paper manufacturer relies on a Curtiss-Wright Basis Weight Control installation to reduce weight variations in both machine and profile directions.

With Curtiss-Wright wet and dry end weight control systems, accurate settings on moisture extraction equipment can now be made. Machine speeds can be increased or steam requirements lowered, since the sheet enters driers in the driest possible condition.

Learn how Curtiss-Wright Basis Weight Control Systems can increase your on-weight production quality. Write Industrial Controls Dept., Curtiss-Wright Electronics Division, Carlstadt, New Jersey.

Write for information on Curtiss-Wright's NEW DRAW SPEED GAUGE.

WEST COAST REPRESENTATIVE:
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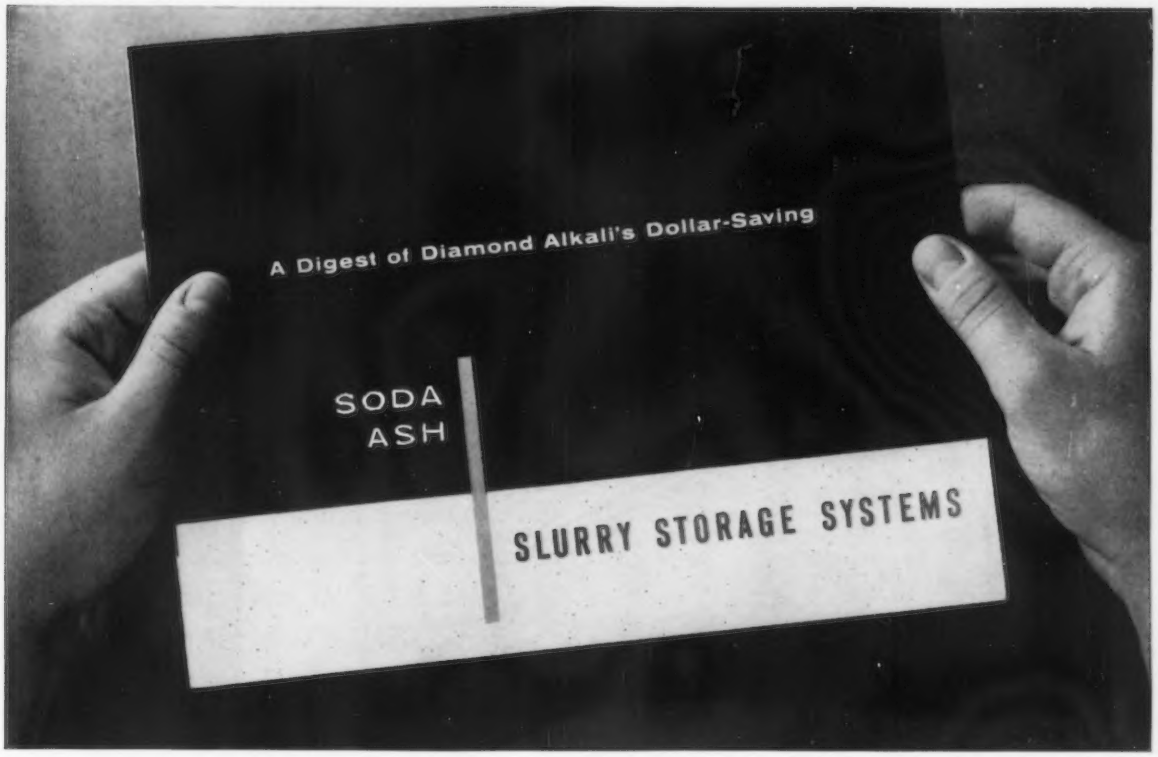


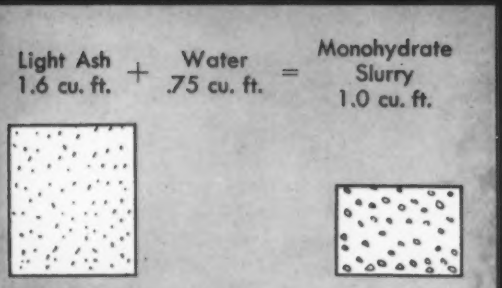
New, FREE booklet shows how soda ash users can cut storage space up to 60%

Do you use light soda ash as a solution in your processing operations? If you do, DIAMOND-developed slurry storage systems can save you money . . . in handling, installation, storage.

This new, 16-page booklet from DIAMOND is loaded with facts, photos and full-page diagrams, showing the three alternate systems now used by many plants. These systems are based on a simple principle: Increase the bulk density of the material and store it in a readily usable form.

Slurry storage often requires 60% less space than is taken by an equal weight of soda ash in dry form. Example: 58% light soda ash has a bulk density of about 35 lb./cu. ft. Storing it as a monohydrate increases the density to about 56 lb./cu. ft. That's a 60% gain in storage capacity. Look at the diagram.

The booklet is yours, free for the asking. Mail the coupon today. If you'd like information on soda ash or any other basic alkali products, call your nearby DIAMOND representative. Or write DIAMOND ALKALI COMPANY, Union Commerce Bldg., Cleveland 14, Ohio.



Diamond Chemicals

Diamond Alkali Company, Union Commerce Building, Cleveland 14, Ohio

Please send "Soda Ash Slurry Storage Systems."

Name_____

Title_____

Company_____

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Pulp from de-inked waste paper, processed with d-i LESTOIL will give you
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effectively de-inks newsprint, magazine, ledger and mixed papers. Inks are completely emulsified and dispersed — become part of and float out with the water.

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produces fibres that are immaculately clean—resulting in a clearer and stronger sheet of paper of uniform color and quality.

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We are so sure that d-i LESTOIL can do a DE-INKING job better than anything else that we are inviting you to try it — cost free — underyour own particular conditions.

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for rotary kiln service...

HARBISON-WALKER REFRACTORIES

of special merit—for every requirement

FOR HIGH TEMPERATURE ZONES

ALUSITE. This leading brand of 70% alumina refractory owes its extremely wide use for rotary lime sludge kiln linings to its unusual combination of desirable properties. Its high density and low permeability account for its excellent resistance to penetration, such as promotes fluxing. ALUSITE is strong and highly resistant to mechanical stresses, abrasion and thermal shock.

FOR INTERMEDIATE ZONES

ALAMO (Super-Duty), H-W CROWN (High Duty). Typical brands for intermediate zones. Harbison-Walker super-duty and high duty fireclay brick, available from widely distributed plants assure lowest delivered costs, and fulfill all requirements for intermediate and cold zones.

FOR CHAIN SECTIONS

DURO, WYLAM A. These brands are the outstanding wear-resistant rotary kiln liners for chain sections of lime sludge kilns and for cold zones of limestone burning kilns.

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H-W EXTRA STRENGTH CASTABLE, among the various classes of monolithic refractories, is strongest and most resistant to impact and abrasion. It is easily applied around all designs of chain holders and renders excellent service. H-W SUPER CASTABLE is adequate in refractoriness for lining hoods which are subjected to unusually high temperatures and lends itself to easy installation with much saving in time.

Harbison-Walker manufactures all classes of refractories including monoliths, mortars and insulating refractories, for every rotary kiln requirement.

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AND SUBSIDIARIES
General Offices, Pittsburgh 22, Pennsylvania

World's Most Complete *Refractories Service*

"VIRGINIA" OFFERS:

sodium hydro	zinc hydro
sulfur dioxide	technical service

Our technicians can help you cut production costs

One—or all three—of these powerful "Virginia" reducing and bleaching agents may be specific for materially lowering your production costs. Call upon our more than 35 years' experience for an appraisal of your present production methods. Chances are our technical experts will be able to make recommendations which will not only cut your costs but upgrade your product as well.

Also at your service are large stocks, ample production capacity, quick dispatch of orders, and a fleet of fast trucks to insure prompt deliveries. "Virginia" stands ready to give you the *service* you want—send today for literature and test samples of "Virginia" reducing and bleaching agents. Industrial Division, VIRGINIA SMELTING C o., Dept. 268, West Norfolk, Va.

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Available in Canada and many other countries

"Mister I have a moisture control now, why should I take on HURLETRON?"

That's a good question, and a fair one.
And here's the answer: *You'll make more money.*

Here's why:

Every day in a major paper mill, the Hurletron Automatic Moisture Control is increasing production by one half percent. At the same time, a better quality and more uniform paper is produced. Because of this increased production and the resulting better quality product, the Hurletron Automatic Moisture Control paid for itself within four months.

The Hurletron system uses an entirely new concept in moisture control, and it's successful. As the system controls moisture, it also measures, indicates, and records, providing your operators with an accurate, visual production picture at all times.

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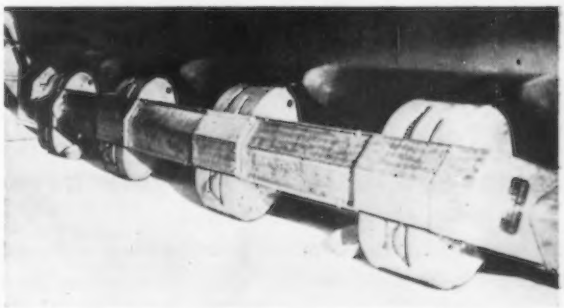
Add it all up. The Hurletron Automatic Moisture Control system gives your plant increased production, improved quality, and lowered costs with no increase in stock requirements. Write for your brochure today and find out about the Hurletron Automatic Moisture Control as well as the complete package that Hurletron offers.



Pictured above are the Gauging Heads of the Hurletron Automatic Moisture Control.

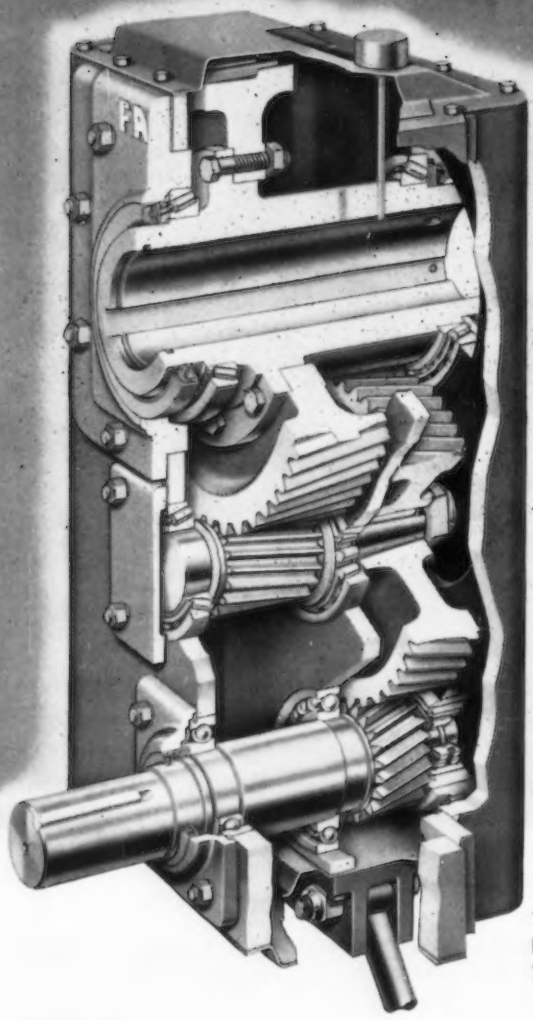
HURLETRON **Electric Eye Equipment Company**

1930 EAST FAIRCHILD STREET, DANVILLE, ILLINOIS

New...LARGER...ALL-STEEL!

-the FALK 315J Shaft Mounted Drive

- **for higher horsepower**
- **for lower output speeds**



THE NEW 315J...
FROM 2 HP AT 5 RPM
TO 50 HP AT 359 RPM

Check These Features

New — 3-wall, one-piece housing provides double the ability of cast iron to withstand external impact or shock loads.

New — ratio range—5:1, 14:1 or 25:1. Higher ratio range makes possible lower output speeds...smaller sheaves...standard, rather than slow-speed, motor.

New — ease of maintenance. All revolving elements can be easily replaced in the field, on the jobsite! Inspection covers permit quick inspection of gears and bearings. Dipstick provides quick check on lubricant.

New — longer center distance between shafts allows use of larger sheave on input shaft. Unit may be mounted with input shaft next to driven machine, and with motor mounted directly under driven shaft.

PROMPT DELIVERY

Standard units are available for off-the-shelf shipment from factory, warehouse or distributor stock.

LET US HELP YOU

Your Falk Representative or Authorized Falk Distributor will gladly review your applications and offer suggested selections—without obligation.

Write for Bulletin 7100

The new Falk 315J also gives you these famous Falk advantages—

- Falk extra-depth, extra-capacity gear teeth—plus the extra efficiency (98½% per gear mesh) of helical gears for maximum power utilization.
- Through-hollow shaft design for easy installation, with internal groove to permit use of bearing puller when dismounting unit. Hollow shaft also permits use of unit on through-shaft applications.
- Tie rod fastened to steel housing by steel bracket with bolt in double shear. Shock load on tie rod will not damage housing.

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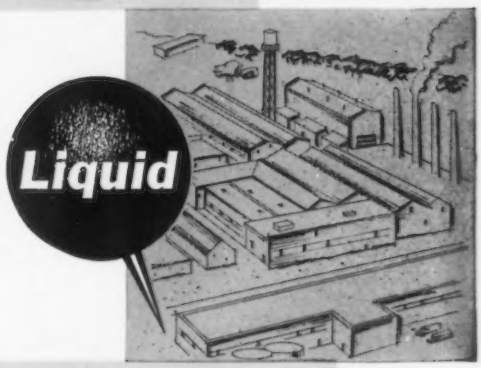
Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

FALK

...a good name in industry

NOPCO HAS THE DEFOAMER THAT WILL GIVE BEST RESULTS FOR EACH MILL



Nopco, the first to make a chemical defoamer for the pulp and paper industries, has an unrivalled wealth of first-hand experience, and the widest range of defoamers...paste, liquid, and flake. One thing we know for sure—there's no such thing as a defoamer that works equally well in *every* mill. Local conditions vary too much.

That's why we prefer to analyze a sample of white water from your mill. We test it with every potentially effective defoamer—including if you like, the one you are now using. When we have finished our exhaustive tests, we are able to determine scientifically and impartially, which defoamer will give your mill the even fiber distribution, fewer breaks, higher machine speeds, and improved sheet formation that you should have.

What you want is the absolute minimum of foam in your operation. If you haven't given Nopco a chance to "prescribe", you can't be sure you have that absolute minimum. Why not consult Nopco Chemical Company, today?

NOPCO

PLANTS: Harrison, N. J.
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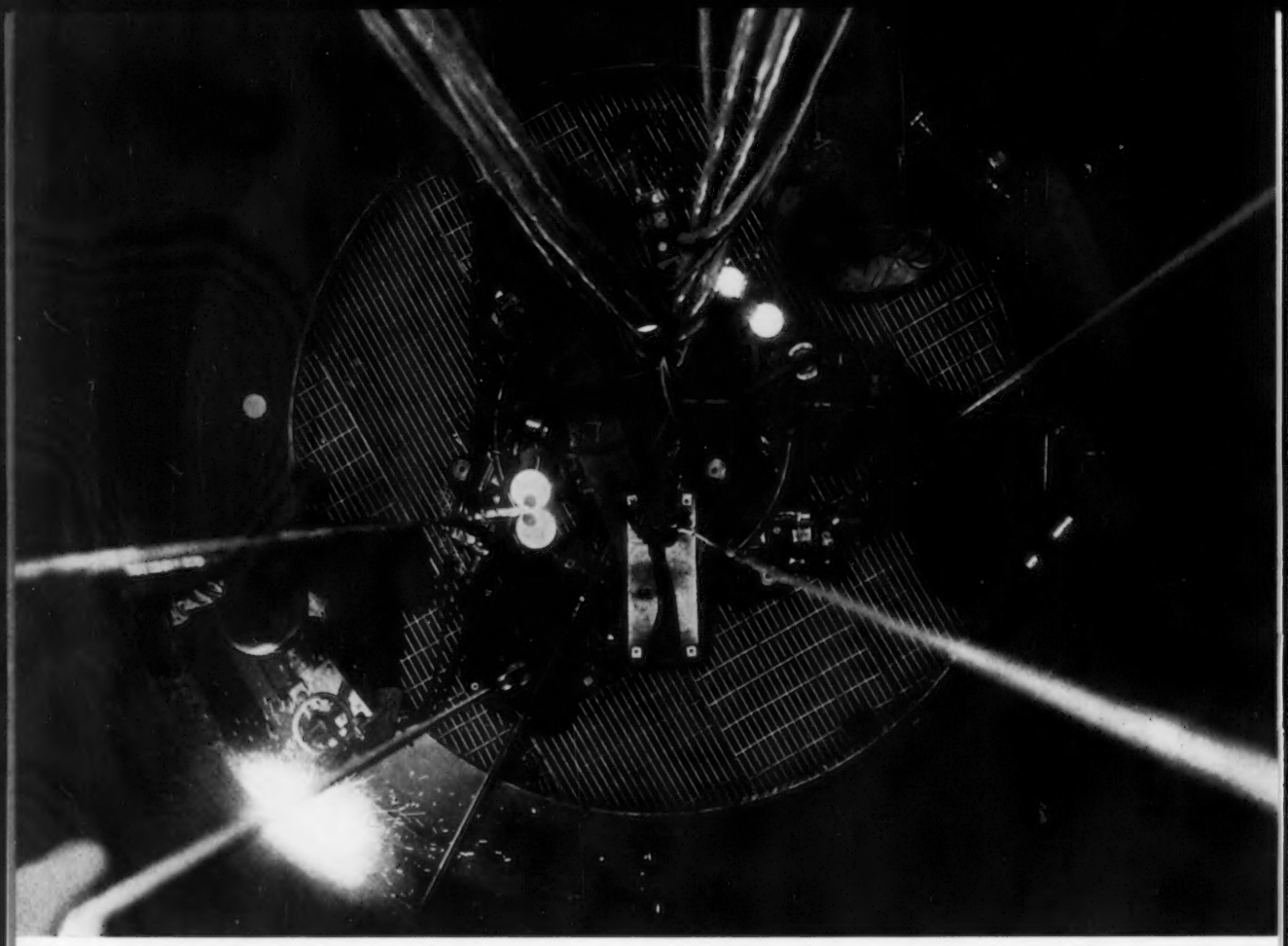


How This Stainless Overlay Was Made: 1/16" diameter Crucible stainless steel welding wire was applied automatically, by the inert gas consumable electrode process, to the entire inside surface of the digester. The finished lining forms a protective coating 1/8" thick. Overlay was made by *The Portland Co., Portland, Maine.*

Stainless overlay stops corrosion of Kraft Digester—saves 2/3 cost of replacement

Corrosion and erosion were eating away the mild steel interior of this Kraft digester. Replacement was considered. But lining it with a complete stainless steel overlay proved a better, far less expensive solution.

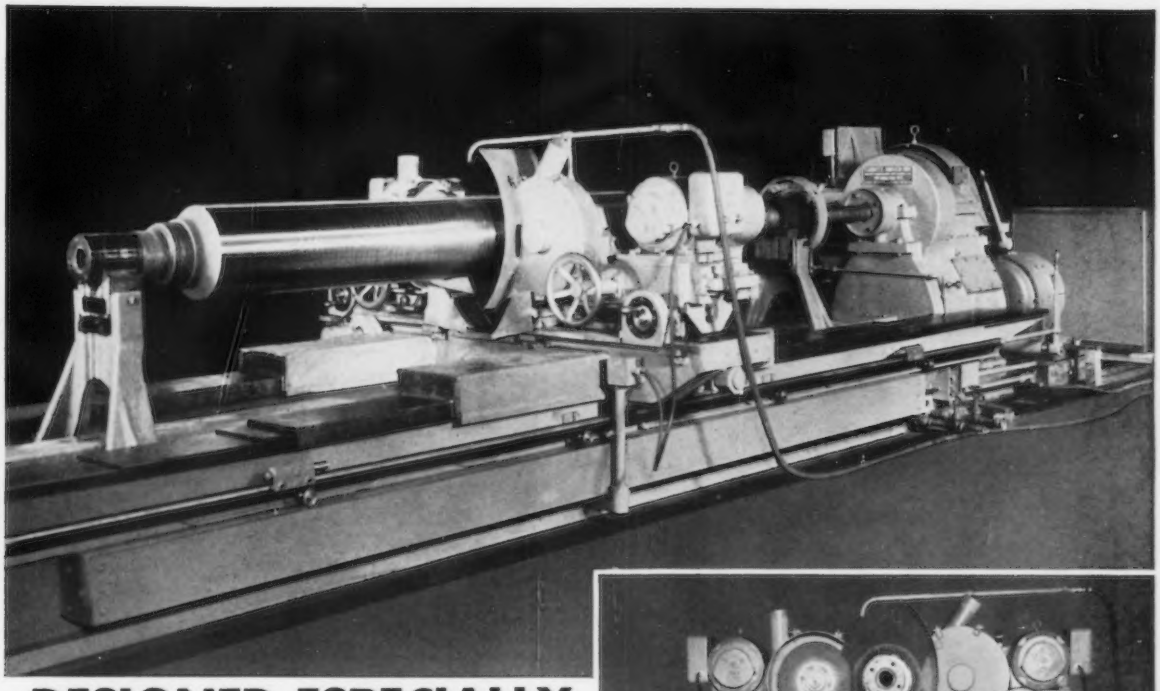
The tough, corrosion-resistant stainless lining successfully fights the attack of hot liquors and gases, adds strength, and gives the entire unit a new lease on life—all at as low as 1/3 the cost of replacement. What's more, should it become necessary, additional overlay metal can be applied locally to extend the life of the digester even more.

This is just one example of how stainless equipment in the paper mill prevents rust and wear . . . minimizes corrosion and erosion . . . adds years to processing equipment. Further information is contained in a 20-page booklet "Making the Most of Stainless Steels in the Pulp and Paper Industry". Write now for your free copy. *Crucible Steel Company of America, Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

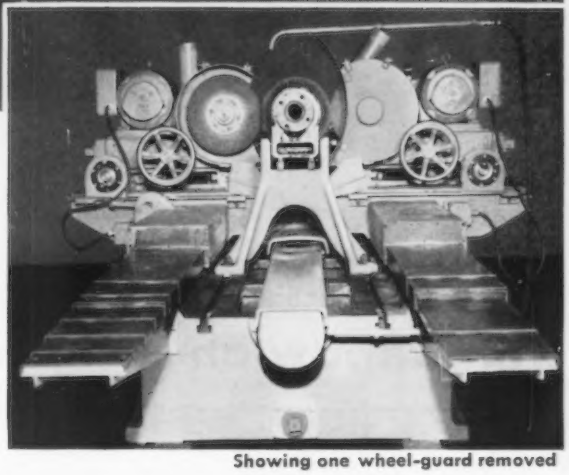


DESIGNED ESPECIALLY FOR THE SMALL MILL

...This New #3 Type GHV

LOBDELL

ROLL GRINDER



Showing one wheel-guard removed

...offers these outstanding features:

- Wider and heavier bed and carriage construction.
- Inverted Vee-ways . . . stronger, better lubricated.
- Metallic telescoping way-covers give full protection.
- Crowning device . . . newly designed to give full range of desired crown curves.
- Choice of A.C. or D.C. electrical equipment to suit mill needs.
- Grinding wheel mounted on end of wheel spindle for quick wheel change.
- Handwheel control on side of wheel-head permits observation of work while feeding wheel.
- Coarse and fine feed of wheel at operator's choice.
- Automatic wheel infeed to compensate for wheel wear on chilled iron.
- Self-contained wheel spindle . . . forced feed lubrication with oil pressure control.

Maximum simplicity of design for fool-proof and error-free operation so far as effective design can help . . . maximum accuracy of result on both iron and rubber covered rolls. Dust collection equipment available (not illustrated here).

Capable of grinding rolls from 6'' to 32'' or 36'' and with face length according to bed length . . . weighing 16 tons or less.

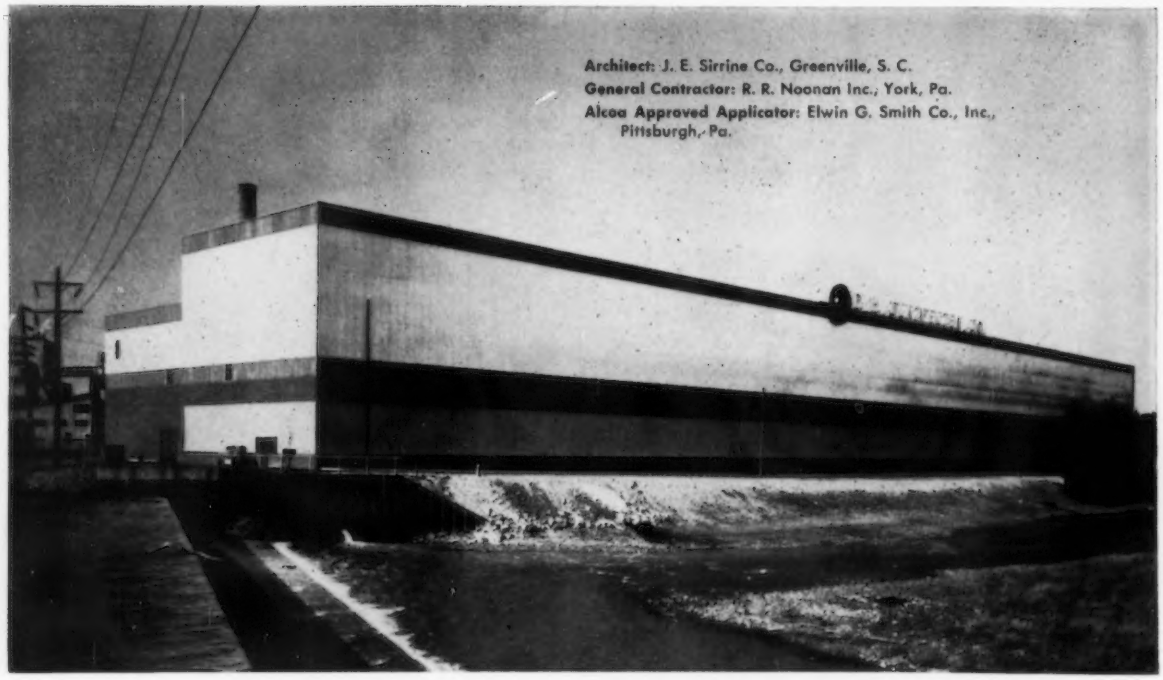
Write for detailed information on this new #3 Type GHV LOBDELL Grinder.

• CHILLED IRON ROLLS • MACHINE CALENDER STACKS • ROLL GRINDING MACHINES
• ROLL CALIPERS • KNIFE GRINDERS • ABRASIVE CUT-OFF SAWS

UNITED ENGINEERING AND FOUNDRY COMPANY

WILMINGTON PLANT

WILMINGTON 99, DELAWARE



Architect: J. E. Sirrine Co., Greenville, S. C.
General Contractor: R. R. Noonan Inc., York, Pa.
Alcoa Approved Applicator: Elwin G. Smith Co., Inc., Pittsburgh, Pa.

The new P. H. Glatfelter paper plant in Spring Grove, Pa., is a striking example of aluminum sandwich wall construction combined with brick and translucent plastic. Sandwich walls, with an interior layer of glass fiber insulation, have three times the insulating efficiency of eight-inch masonry walls.

Stop corrosion for less money with sandwich walls of ALCOA ALUMINUM

Corrosion's appetite is sharpest in chemically contaminated atmospheres in and around paper mills. With sandwich walls of Alcoa® Aluminum, atmospheres normally associated with kraft or sulfide processes cannot penetrate the invisible oxide shield of aluminum.

And you pay no more for this premium protection. In fact, sandwich walls of Alcoa Aluminum are the lowest cost insulated construction known for walls! They go up fast, handle quickly and allow lighter framing. Most important, long-range savings in maintenance costs are downright sensational.

Equally well, aluminum ductwork, handrails, catwalks, hoods and other paper mill fixtures mean untold economies throughout. For complete facts, contact your nearby Alcoa sales office, or write Aluminum Company of America, 858-K Alcoa Bldg., Pittsburgh 19, Pa.

NEW!
"ALCOA THEATRE"
Exciting Adventure
ALTERNATE MONDAY EVENINGS

WE CHOSE
ALCOA
ALUMINUM
INDUSTRIAL BUILDING PRODUCTS
ALUMINUM COMPANY OF AMERICA

Your Guide to the Best in Aluminum Value

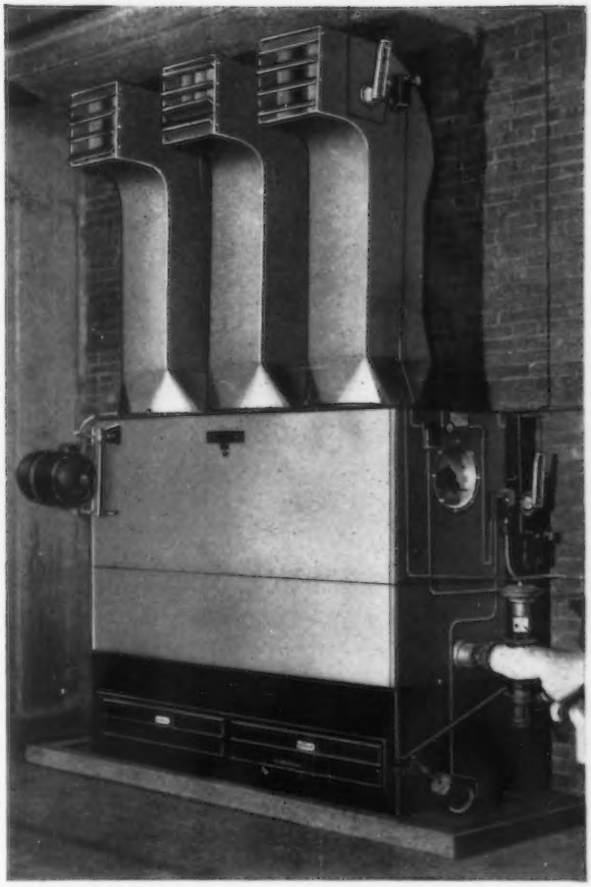
"FLEXIBLE" PLANT HEATING BY "BUFFALO"

IS ECONOMICAL - SAVES PRODUCTIVE FLOOR SPACE

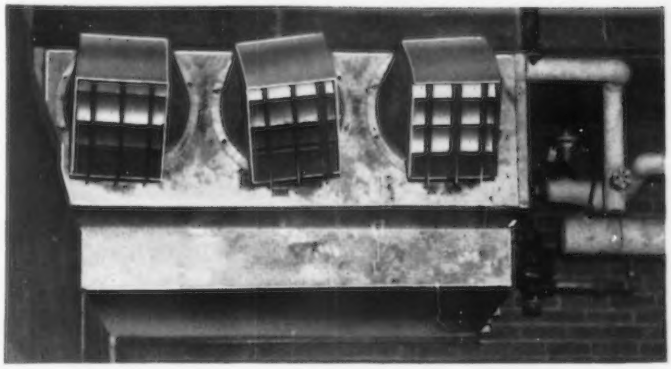
- **Easy, Fast Installation**
- **Quiet, Efficient Operation**
- **Quick, Easy Maintenance**
- **Long, Trouble-Free Life**

"Buffalo" Unit Heaters are compact, versatile, practical . . . easily adaptable to any and all of your plant heating and ventilating needs.

If your heating requirements are localized, you can use one or more "Buffalo" Unit Heaters of correct capacity to supply warm air or ventilation to a certain specific area in your plant. Or, you can use a battery of these flexible units to heat your entire plant . . . economically and efficiently.



Compact "Highboy" Unit Heater for Low Ceiling Areas.



Suspended "Lowboy" Unit Heater Requires No Floor Space

Here are some of the many unique advantages you will find in "Buffalo" Unit Heaters: non-freeze "Aerofin" coils radiate maximum heat, permit space-saving design. Sectionalized construction speeds installation. Easily-accessible, standardized parts — plus outside-lubricated fan bearings — facilitate maintenance. Smooth, quiet, efficient "Buffalo" fans insure optimum heat. Swivel outlets aim air-flow where it's needed. Heavy-duty paneling, fans, swivel outlets, coils and bearings insure long life with minimum attention. "Q" factor construction — the built-in Quality that provides trouble-free satisfaction and long life is in every "Buffalo" product.

For full details on "Buffalo" Unit Heaters, contact your nearest "Buffalo" Engineering Representative — or write for Bulletin 3704A.

"Buffalo"

BUFFALO FORGE COMPANY

Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

West End **SALT CAKE** merits your confidence for its consistent purity

Here is the new high standard of salt cake quality achieved by exclusive West End production techniques and controls. The product is pure white and exceedingly low in heavy metal content. It is guaranteed 99½% minimum Na_2SO_4 yet actually runs 99.75% to 99.8% Na_2SO_4 typically. We invite your attention to the adjacent typical analysis and welcome your communication.

TYPICAL ANALYSIS

Na_2SO_4	99.5% or better
Na_2O	.05% max.
B_2O_3	.05% max.
NaCl	.07% max.
Insoluble	Trace
Loss on ignition	Less than 0.1%
Solution	Clear
Color	White

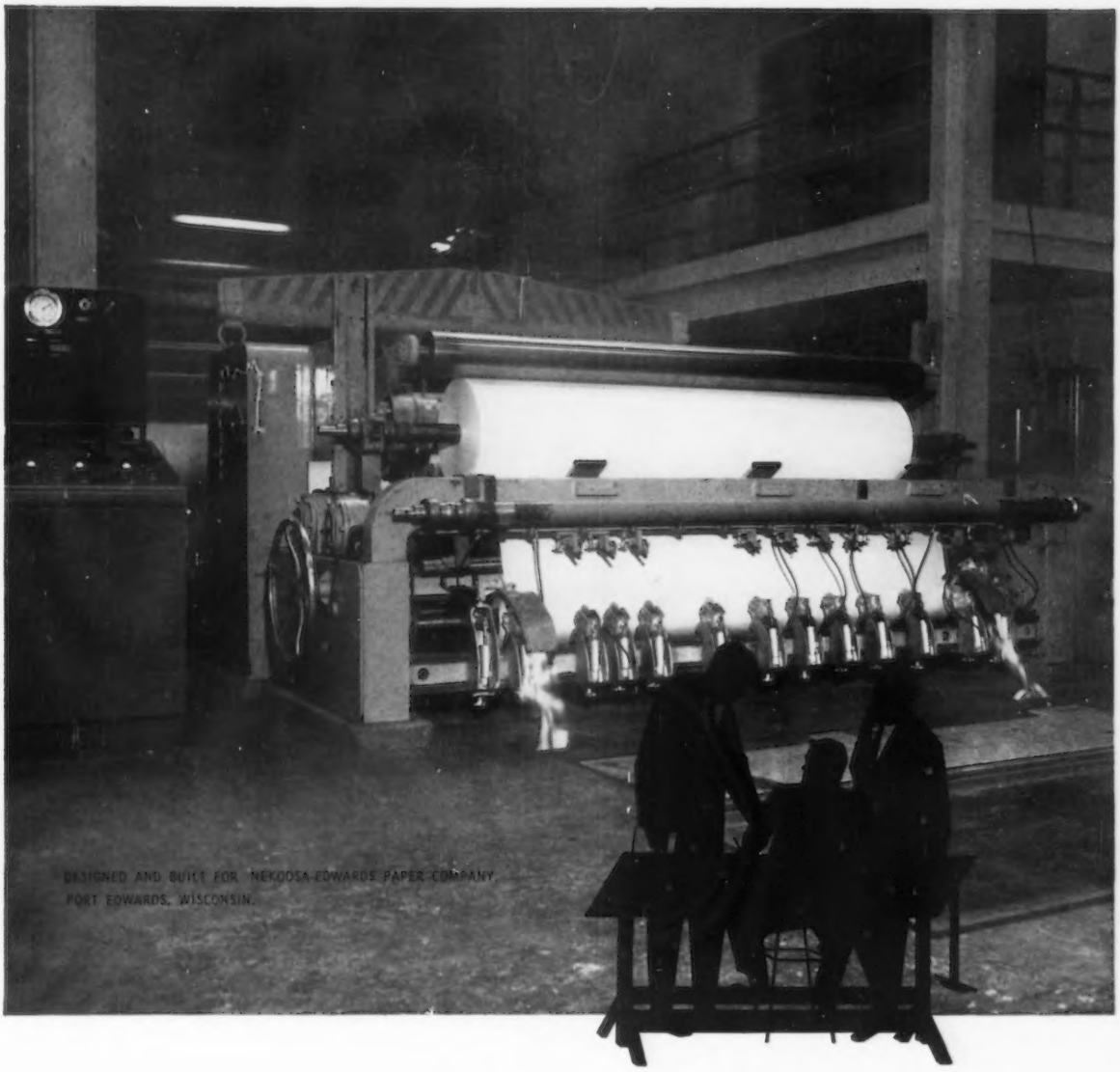
WEST END

West End Chemical Company

DIVISION OF STAUFFER CHEMICAL COMPANY

EXECUTIVE OFFICES, 1956 WEBSTER, OAKLAND 12, CALIF. • PLANT, WESTEND, CALIF.

SODA ASH • BORAX • SODIUM SULFATE • SALT CAKE • HYDRATED LIME



Designing and building only the best

Vibration-free operation . . . accurate, uniform slitting and winding of converter rolls . . . automatic controls for efficient performance! Rigid requirements to meet, so the Appleton Machine Company was selected to do the job.

And from Appleton's experienced design and production staff comes the most compact, low contour "push-button" winder available. The entire operation of this precision winder is pre-set. It requires only minimum attention by the operator. Custom-designed, custom-built, of course!

Ask your Appleton representative about the unusually efficient performance of this "push-button" winder with low center of gravity next time he calls.

KNOWING AND FILLING
THE NEEDS OF THE PAPER INDUSTRY

APPLETON MACHINE COMPANY

APPLETON, WISCONSIN

View of one section of the conditioning room at the main plant, Albany, N. Y., the many colors and shades indicating the wide variety of specialized chemical treatments daily being applied to Albany felts, each proven by performance as best for its particular application.

Specific-Purpose Chemical Treatments by Albany Felt Improve Felt Performance

Albany's extensive research program is constantly improving existing treatments and developing new ones to meet your demands.

Worker supervises and regulates application of one of many specific-purpose chemical treatments to felts in Albany's finishing department.

YES, Albany Felt's advanced chemical treatments *can improve your felt performance* — in roughly 60% of the positions clothed. This percentage represents the share of Albany's felt production currently receiving one *or more* chemical treatments. As the industry's pioneer in the field of chemical treatments, Albany has a wide range of varied treatments, since *no one formula* has been developed to answer *every* demand! These include the B and D series which improve starting and wetting; the W-6 Treatment to provide bacterial control; Z-5 for alkali resistance; and the F, H, J and U series which offer resistance to wear, hardening, filling and stretch in varying degrees dependent upon the desired application. In all, more than 20 of these treatments are at work today, *each solving a specific problem better!* Ask your Albany Sales Engineer for information on those best suited to your needs—his goal, as always, to help you produce *more saleable tons per day!*

ALBANY

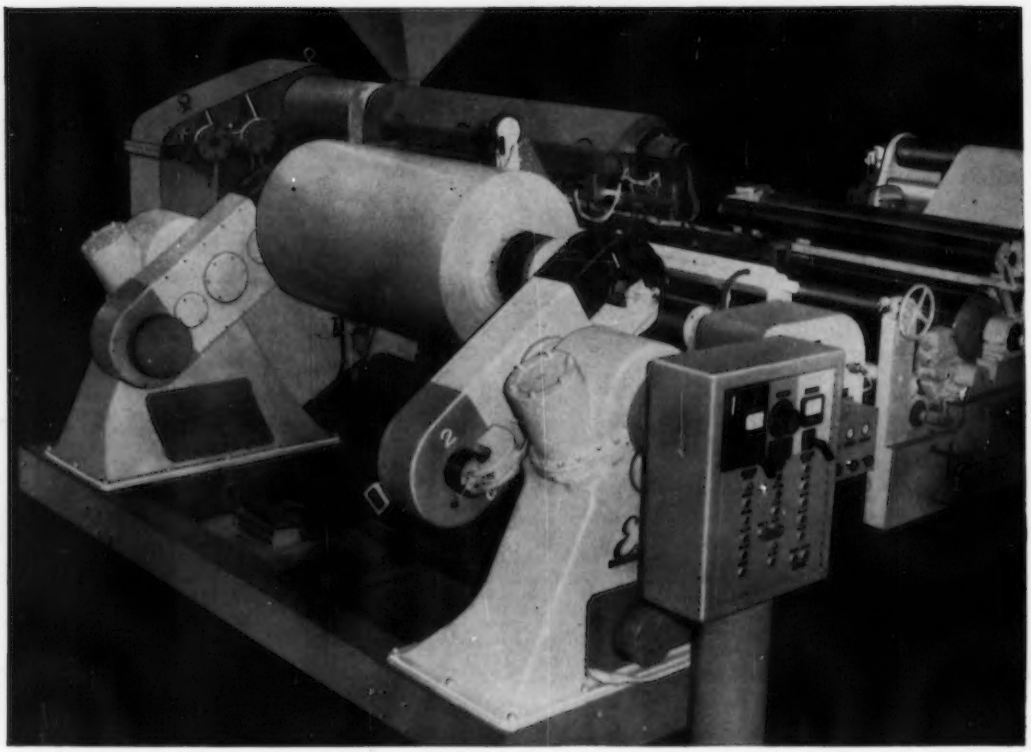
FELT COMPANY

Main Office & Plant, Albany, N. Y. Other plants: Hoosick Falls, N. Y.
N. Monmouth, Me., St. Stephen, S. C., Cowansville, P. Q.

"THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS"

it's Egan 3 to 1

BETTER THAN 75% OF ALL COMPANIES OPERATING POLYETHYLENE EXTRUDER-LAMINATORS USE EGAN EQUIPMENT



This high-speed production unit, with patented features, includes a Flying Splice Turret Unroll, Flying Transfer Turret Winder, Laminator, and 6" Extruder. It was Egan built for Scott Paper Company

Egan's Flying Splice Turret Unroll and Flying Transfer Turret Winder was designed to splice and make roll changes at machine speeds up to 1000 fpm. The unit will apply thin coats of polyethylene to wax paper up to 72" wide.

Discover for yourself why more than three-quarters of all companies in the field rely on Egan.

Write, or phone Randolph 2-0200, for complete information about this and other Egan equipment . . . with many patented features.

FRANK W. Egan & COMPANY

SOMERVILLE, NEW JERSEY

Manufacturers of machinery for the paper converting industry

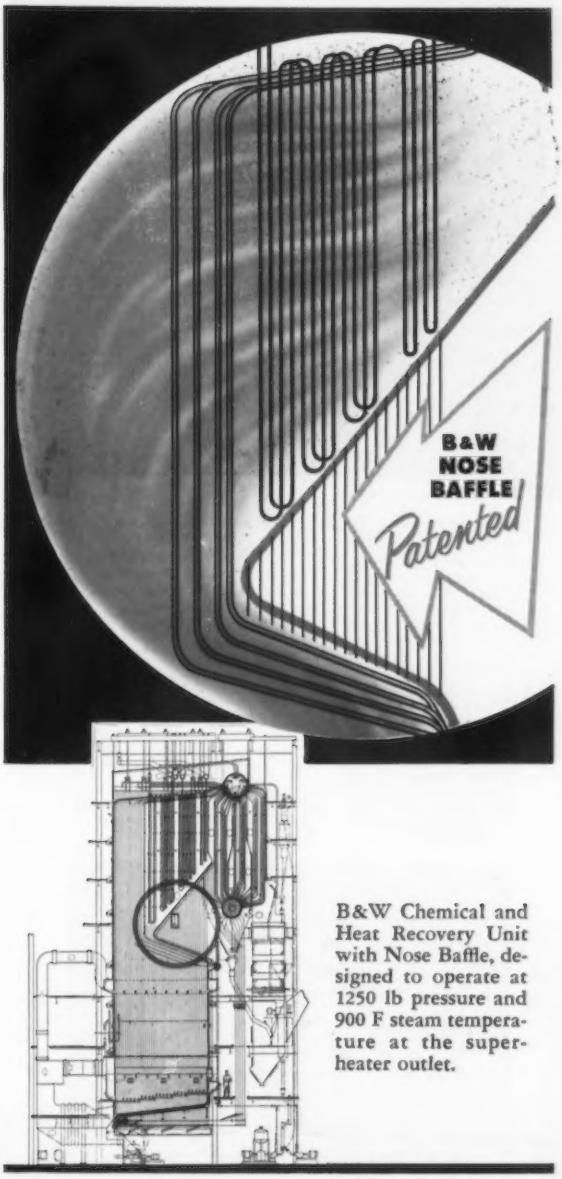
Cable Address: EGANCO — SOMERVILLE NJER

REPRESENTATIVES: MEXICO, D.F. — M.H. GOTTFRIED, AVENIDA 16 DE SEPTIEMBRE, NO. 10; JAPAN — CHUGAI BOYEKI CO., TOKYO. **LICENSEES:** GREAT BRITAIN — BONE BROS., LTD., WEMBLEY, MIDDLESEX; FRANCE — ACHARD-PICARD, REMY & CIE, 36 RUE D'ENGHIEN XE, PARIS; ITALY — EMANUEL & ING. LEO CAMPAGNANO, VIA BORROMEI 1 B/7, MILANO; GERMANY — ER-WE-PA, ERKRATH, BEI DUSSELDORF.

SUPERHEATER PROTECTION

with B&W Recovery Unit NOSE BAFFLE

To meet the demands of the pulp and paper industry for more economical and dependable steam for power generation, modern chemical recovery boilers are being designed for higher pressures and temperatures. B&W Heat and Chemical Recovery Units are in fact now under construction, designed to operate at 1500 lb pressure and 900 F steam temperature at the superheater outlet. Pulp mills can now be assured of lower power costs through increased efficiency as a result of dependable high-pressure, high-temperature steam generated in B&W Heat and Chemical Recovery Units.



B&W Chemical and Heat Recovery Unit with Nose Baffle, designed to operate at 1250 lb pressure and 900 F steam temperature at the superheater outlet.

PROBLEM—

Corrosion of superheater tube metals and increased superheater maintenance can be a serious problem. High superheater tube metal temperatures, resulting from high steam temperatures in the presence of fluid smelt, cause superheater tube corrosion.

SOLUTION—

The B&W Nose Baffle is designed to solve this problem. This patented feature of B&W Recovery Units makes possible uniformly low gas temperatures below the fluid temperature of the ash. The Nose Baffle creates a turbulent mixture between the hot furnace gases rising from the hearth and the cooler gases being recirculated at the front of the nose. The gas and ash temperatures in the superheater are further reduced by shielding the superheater tubes from the radiant heat of the furnace.

RESULT—

Difficult to remove and corrosive smelt deposits are converted to a dry, powdery ash as a result of the lower gas and ash temperatures. Automatically operated retractable soot blowers easily clean the ash from boiler and superheater surfaces. This eliminates superheater metals corrosion and reduces frequent, difficult and costly cleaning to the minimum. Cleaner boiler surfaces assure lower operating costs, reduced labor requirements, and higher recovery unit efficiency.

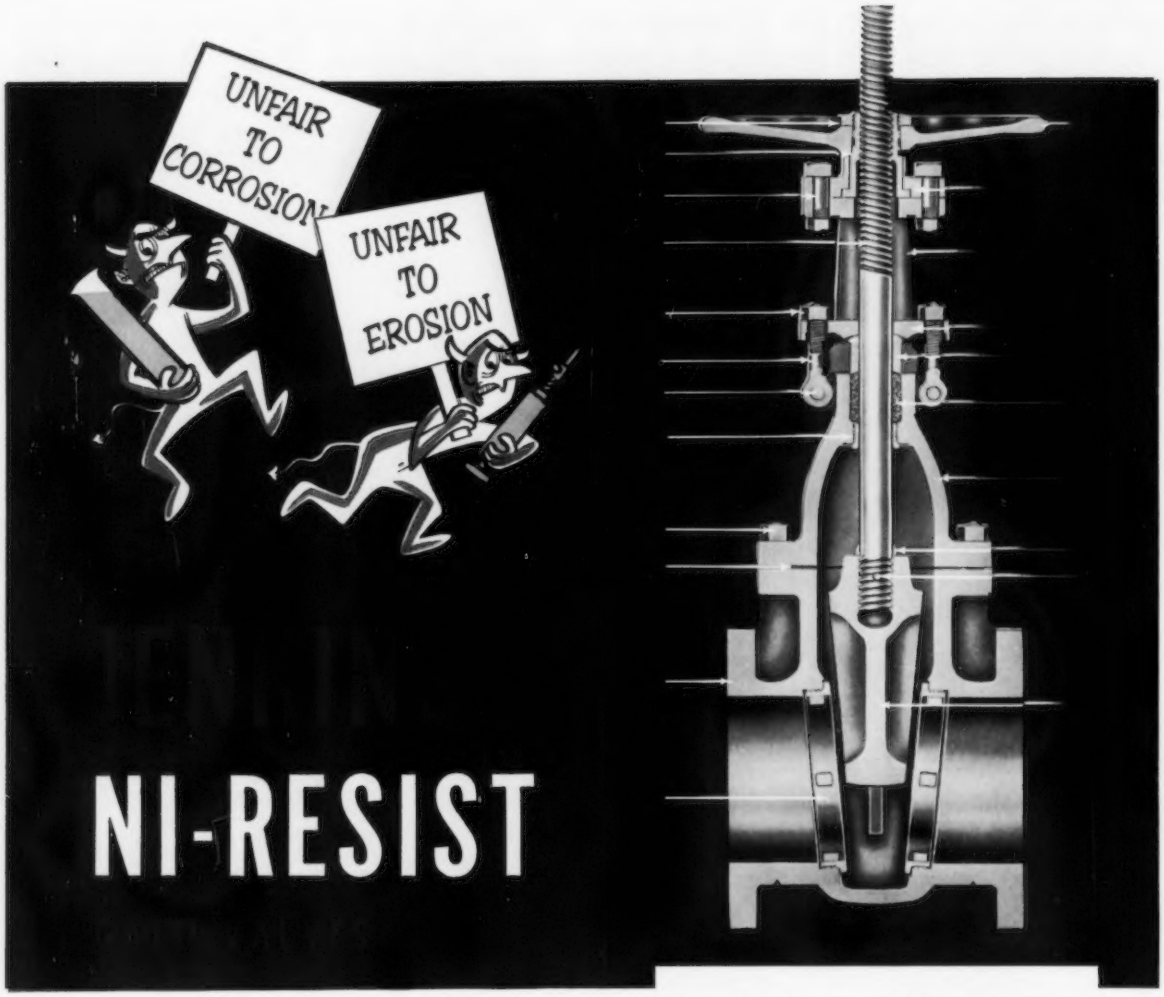
The B&W Nose Baffle design is just one of many cost-saving advantages of B&W Recovery Units proved in service. B&W Recovery Units have demonstrated economical operation and high availability in leading pulp and paper mills for over 20 years.

The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y. P-784

BABCOCK & WILCOX

B&W

BOILER DIVISION



Wherever valves are attacked by acids, salt and alkaline solutions, sea water, brine or other corrosive fluids, vapors or gases, "Jenkins Ni-Resist Gate Valves" are *fighting* words.

In a wide range of corrosive and erosive services common to the chemical, food, plastics, marine, petroleum, and pulp and paper industries, these valves have shown a remarkable ability to withstand corrosion and cut valve costs.

The secret of their long, trouble-free service is the combination of Ni-Resist type 2 cast iron and type 316 stainless steel trim, plus Jenkins *extra value* construction throughout. No other gate valves offer this combination for fighting corrosion.

When choosing Ni-Resist valves, let the famous Jenkins Diamond be your guide. Specify "JENKINS NI-RESIST" — for longer valve life. Write us, or ask your Jenkins Distributor for information folder No. 205. Jenkins Bros., 100 Park Avenue, New York 17.

A Bronze yoke bushing nut
B Handy grip iron wheel
C Bronze yoke bushing
D Iron yoke cap with zerk fitting for lubricating bushing
E Steel yoke cap bolts and nuts
F TYPE 316 STAINLESS STEEL spindle
G NI-RESIST CAST IRON, TYPE 2, yoke
H Bronze eye bolt nuts
I Malleable iron gland flange
J Steel gland eye bolts
K Steel gland lug bolts and nuts
L TYPE 316 STAINLESS STEEL gland
M Teflon impregnated asbestos packing
N TYPE 316 STAINLESS STEEL bonnet bushing
O NI-RESIST CAST IRON, TYPE 2, bonnet
P Steel bonnet bolts and nuts
Q TYPE 316 STAINLESS STEEL spindle ring
R Asbestos gasket
S TYPE 316 STAINLESS STEEL wedge pin
T NI-RESIST CAST IRON, TYPE 2, through-port body
U TYPE 316 STAINLESS STEEL solid I-beam wedge
V TYPE 316 STAINLESS STEEL seat rings

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS
SINCE 1864
Jenkins Bros.

Sold Through Leading Distributors Everywhere

Board Production High Order Backlog Up

Paperboard production for the week ending September 28, 1957, was 300,659 tons, according to the National Paperboard Assn. Only once before was a week's production higher and then only by 200 tons during the inventory building period of early 1956. Production during the last three weeks totaled 897,000 tons, the highest for any previous three-week period. This compares with 833,000 tons made in the same three weeks a year ago. New paperboard orders received during the four weeks of September 1957, amounted to 1,161,000 tons compared to 1,033,000 tons received during the same period of 1956.

September Business Indicators Mixed

There is no general pattern among the various indexes of business and industrial activity for September. Steel production and freight car loadings were down. Residential construction and electric power generation were up. Retail store sales were at about the same level, or slightly below last September. Even within our own industry the picture varied, capacity rate for paperboard mills was a few per cent above last September while paper mills were about the same amount below.

Waste Paper Market Active

Waste paper markets report much greater activity particularly in grades for use in paperboard. This reflects the upswing in board mill activity. Prices for these latter grades have been moving up, especially in the Chicago area.

August Pulp Picture

August pulp production in the U. S. was up a small fraction of 1% over the same month last year, according to the U. S. Pulp Producers Assn. For the first eight months pulp production was off 3%. Domestic shipments in August were off 3% compared with a year ago but foreign shipments were up 5% with the only areas showing a decrease being Africa and the Far East. Production by grades for August show the following change from last year: Dissolving +11%, Bleached Sulphite —0.7%, Unbleached Sulphite —10%, Bleached Kraft +2.3%, Semi-bleached Kraft +22%, Unbleached Kraft—no change, Soda —9%, Semi-Chemical +9% and Groundwood —3%.

More Canadian Newsprint Abroad

Canadian newsprint producers have found overseas shipments to be their solution to the declining demand acceleration by U. S. and Canadian publishers. Their newsprint shipments abroad are up 18% for the first two thirds of this year. Shipments to the U. S. are off one half of 1%.

Oil Price Drop Possible

Stocks of fuel oil are said to be extremely high. There seems to be a possibility of some drop in price for these grades, which would be welcome news to home and mill users alike.

Merfenel 51*

*PACKED IN ONE AND TWO OUNCE ENVELOPES

A new Product

FOR
SLIME CONTROL
•
MOLD PROOFING
•
PRESERVATION OF
STARCHES AND PROTEINS

R. T. VANDERBILT CO. INC.

230 Park Avenue, New York 17, N. Y.

Charmin Cheboygan to Start Up in Dec.

Officials of the Charmin Paper Products Co. expect the Cheboygan, Mich. division will begin partial operations in December. M. J. Auchter, vice president in charge of manufacturing, said at the start only one of the two paper machines will be ready to begin production. Rebuilding and assembly of the second one will be complete, possibly in February.

A new groundwood bleach plant presently under construction should be ready for initial operations. The bleachery will be housed in a new four-story building of concrete and welded steel construction.

When the plant is in full production it will employ an estimated 100 to 125 men. Plans call for a five day workweek consisting of three eight-hour shifts for both paper machines.

It is planned to manufacture industrial toweling on number eight machine, the first to start. The machine will be rated at 1200 feet per minute operating speed.

Production on number nine machine, scheduled for February, will be devoted to grades of industrial tissue and napkin stock.

The two machine numbers follow the numerical sequence of Charmin's seven paper machines in their Green Bay plants.

A towel interfolder is being installed in the Michigan plant to handle part of the production of number nine machine. The remainder of the stock will be shipped to Green Bay for conversion.

Completely Renovated

Idle for nearly three years, the plant was purchased by Charmin in June 1956. Since then it has been completely renovated from roof to basement and a modern pulpwood storage yard provided. The Cheboygan Construction Co., general contractors, installed new roofing, windows and sash, repaired and repainted the exterior. Old, unusable buildings were removed and the grounds were landscaped.

New locker rooms, wash rooms, first aid rooms and a large general office are in final stages of completion. Sanitary facilities throughout the plant have been improved. A new sprinkler system was installed in all plant buildings by the Viking Sprinkler Co. A major project still incomplete is reconditioning of the boilers.

Stock Preparation

Pulping and stock preparation facilities are undergoing a major face-lifting. Five of six beaters are being reconditioned. New stock chests are being added. A new Morden pulper, complete with stock proportioning system for both paper machines is being installed. A completely new ventilating system for the paper machine building is included in the project.

In order to convert the two existing paper machines from a marginal operation to modern, competitive units it was necessary to virtually rebuild them, Mr. Auchter said. Much of the replacement machinery has arrived in the past few months and is being installed by crews of the Cheboygan Construction Co. They are also installing auxiliary equipment and electrical and piping systems.

Georgia-Pacific Mill on Schedule

Construction of the new Georgia-Pacific Corp. pulp and paper mill at Toledo, Ore., is proceeding according to schedule which calls for the plant to be in production early in 1958.

Various elements of the mill are rapidly taking form. Digesters, brown stock washers, evaporators, liquor storage and chemical recovery tanks are in place, the paper machine and the boilers are presently under erection, chip and pulp conveyor systems are installed. Sixty-four dryer rolls, five feet in diameter and 22 feet long, are now being installed. As yet to take form is the 600-foot long elevated, pneumatic pipeline which will carry wood chips from the Georgia-Pacific lumber and plywood mills across the cove for use in making pulp and paper.

Brunswick to Spend $3 Million

Brunswick Pulp & Paper Co., Brunswick, Ga., has announced a plant improvement project to cost $3,145,000. The project involves changes and improvements to the pulp bleaching plant, including replacement of hypochlorite stages with chlorine dioxide.

Eastex Buys Southland Cylinder Machine

R. M. Buckley, president of East Texas Pulp and Paper Co., Evadale, Texas and E. L. Kurth, president of Southland Paper Mills, Inc., Lufkin, Texas jointly announced that they have reached an agreement covering the sale to Eastex of Southland's 120-inch cylinder board machine.

The previously announced installation of a fourth newsprint machine at Southland will result in their not having sufficient chemical pulp capacity to continue operating the cylinder machine, whereas Eastex can increase pulp production for that purpose as well as maintain its current volume of fourdrinier bleached board, paper and market pulp.

Perkins-Goodwin Co., New York, sales agents for Southland cylinder board, will act in the same capacity for Eastex. The machine is scheduled for transfer in the middle of 1958 and will be out of production only one month. Perkins-Goodwin will arrange to have Southland build up sufficient stocks of board in advance to protect customer needs during the short transfer period.

Southland and Eastex will cooperate in transferring some of the Cylinder Machine personnel from Lufkin to Evadale.

Boise Cascade Breaks Ground

Formal ceremonies marking the beginning of construction on a corrugated container and a kraft container board plant at Walla Walla, Wash., were held this week. The project is being built for Boise Cascade Corp. It is anticipated that the box plant will be in operation in six months and the paper mill in 18 months. In the interim between start of the two plants, the box plant will be supplied with purchased board.

Hoffman Construction Co. of Portland, Ore., has been awarded the contract for the box plant.

W. Mich. Scholarships Total Over $10,000

A total of 27 students in paper technology at Western Michigan University are sharing $10,346 in scholarship monies this fall. Grants range from $200 to $573.

Another $1,450 has been given to seven students in the form of awards for high academic attainments during the past one to three years of study.

P & W Incorporation

Parsons & Whittemore Paper Mills Corp. has filed a charter of incorporation with the corporation department of the Secretary of State's office, Dover, Del. Authorized capital stock of the firm is 250 shares of stock, no par value. United States Corporation Co., Dover, Del., is serving as the principal office.

Pulping Conference Set for Quebec

The third International Mechanical Pulping Conference, jointly sponsored by the Technical Section of the Canadian Pulp and Paper Assn. and the Technical Assn. of the Pulp and Paper Industry, will be held at the Chateau Frontenac, Quebec, September 10-12, 1958.

The General Chairman of the conference is J. K. Kirkpatrick, Bowaters Southern Paper Corp., Calhoun, Tenn. T. G. Shepherd, Donnacona Paper Co., Ltd., Donnacona, Que. is in charge of local arrangements. J. H. Perry, Norton Co., Worcester, Mass. is publishing chairman and is being assisted by W. H. Copeland, Norton Co. of Canada, Hamilton, Ont.

It is expected that the program of the conference will include three half-day technical sessions and two half-day panel discussions, as well as mill visits to pulp and paper mills in the Quebec area.

Cartoons, Anyone?

The cartoons regularly appearing in this magazine are purchased from a number of sources. If you draw as a hobby and would like to sell us some cartoons about our industry, please submit some rough pencil sketches.

P&P Conference In Kalamazoo

Western Michigan University's department of paper technology will hold its second annual pulp and paper conference next January 23, 1958.

This will coincide with the date of the annual "Papermakers' Night," sponsored jointly by the Kalamazoo Valley section, TAPPI, and the Michigan division, Superintendent's Association, and held at Kalamazoo's Harris hotel.

Invitations will welcome guests to a program on "Modern Methods of Pulp Manufacture," and will also include an opportunity to visit the new paper industry laboratories and to inspect exhibits.

Canadian P&P Technical Meeting

The 1958 Annual Meeting of the Technical Section, Canadian Pulp and Paper Assn., will be held at the Mount Royal Hotel, Montreal, January 29, 30 and 31.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending September 28, 1957, was 93.5 per cent compared with 90.2 per cent revised for the preceding week. The ratio was 101.0 per cent for the corresponding week a year ago. Mills producing newsprint exclusively are not included.

The paperboard production ratio for the week ending September 28, 1957, was 99 per cent, compared with 96 per cent for the preceding week and 95 per cent for the corresponding week last year.

(Detailed statistics on page 78.)

Canadian Pulp Aug. Production

Canadian pulp production in August totalled 891,683 tons as compared with the 931,483 tons in August a year ago. During the month, 693,434 tons were consumed in Canada as compared with 708,198 tons in 1956. Exports also declined from 219,409 tons in August 1956 to 211,871 tons this year.

For the year to date, 7,038,319 tons of pulp were produced, a marginal increase from the 7,030,041 tons produced in the first eight months of last year. Similarly, pulp used in Canada increased from 5,390,199 tons to 5,487,462 tons during the same period. Exports for the first eight-months were 1,522,394 tons as against 1,587,576 tons in 1956.

Paper Merchant Firms Merge

Merger of Stevens-Nelson Paper Corp., Whitehead & Alliger Co., Inc., both paper merchants, to form the Nelson-Whitehead Paper Corp. with headquarters at 7 Laight St., Manhattan, has been announced by George A. Nelson, chairman of the board, and Joseph M. Whitehead, president of the new firm. Other officers are George A. Nelson, Jr., vice president, and Edwin R. Whitehead Jr., secretary-treasurer. Other personnel remains unchanged, the announcement said, and all mills of the two merged firms will be retained.

Columbia Cellulose Moves Sales to Vancouver

T. N. Beaupre, executive vice president, Columbia Cellulose Co., announces that the director of pulp sales, W. E. D. Gray and his department have been moved from Montreal to the Vancouver office, at 1030 West Georgia St. Transfer of the pulp sales department to Vancouver is designed to insure closer collaboration between the company's sales, research and development, and manufacturing departments.

New I P Vice Presidents

The Board of Directors of International Paper Co. has elected Lamar M. Fearing and William S. Snyder vice presidents of the company it was announced by F. Henry Savage, vice president and general sales manager. The two officers, who have served as assistant general managers since 1954, will continue in that capacity.

PAPER PEOPLE

Norman Raymaker

Donald Schultz

Gerald White

Charmin Announces Supervisory Promotions

Advancement of personnel of the Charmin Paper Products Co., Green Bay, Wis. to new supervisory positions has been announced. Norman Raymaker, division B paper mill superintendent, was named Cheboygan, Mich., division manufacturing superintendent. In training to succeed him is Donald Schultz, chemical engineer.

Mr. Raymaker will take over his new position late in October in Cheboygan. He began as a fifth hand on a paper machine in 1929, was promoted to supervisor's assistant in 1942, and two years later advanced to tour foreman in the firm's division A paper mill. He was appointed division B paper mill superintendent in 1947, a position he held until his present promotion.

Mr. Schultz, 32, has been with the Charmin organization since 1949. A chemical engineer, he was selected to head the Charmin research department in December 1955.

Another transfer to the company's Michigan plant was the appointment of Gerald White, Cheboygan division plant accountant. He had been an accountant in the Green Bay general office since April 1953.

Cousins Retires from Scott

Dennis E. Cousins, vice president in charge of Scott Paper Co.'s Mobile, Ala. plant, retired September 30. He had been in the paper business for 38 years.

Mr. Cousins saw the Mobile plant grow from a "pig pen site" to a multi-million dollar plant. A native of Maine, he joined Hollingsworth & Whitney Co. in Mobile in 1938 and was named manager of the Mobile plant in 1940 when it began operations.

Mr. Cousins was the first manager of the plant. He was named a vice president of Hollingsworth & Whitney Co. in December, 1950, and the following September became a director of the company. He became a vice president of Scott with the merger of Hollingsworth & Whitney into that organization.

Long-Bell Staff Change

Warren R. Taber, purchasing agent at the International Paper Co., Long-Bell Division, in Longview, Wash., for the past 33 years, retired October 1.

Frank Wean, assistant purchasing agent, will succeed Mr. Taber. Mr. Wean has been assistant purchasing agent since 1951.

Holyoke's Hopler Retires

William W. Hopler, manager of Holyoke Card and Paper Co.'s sales office, has retired after 16 years with the company. Prior to that time he had spent 17 years with the United States Envelope Co., Springfield, Mass., and 25 years in the merchant field with the original Storrs and Bement, and John Carter companies.

Survey Far East Paper Industry for ICA

L. W. Strattner, retired vice president of West Virginia Pulp and Paper Co., and Henry Perry, Consultant, former editor of *Paper Trade JOURNAL*, have just returned from an extensive Far East trip where they made an economic study of the pulp and paper industry for the International Cooperation Administration. Retained as special consultants to the ICA for this project, their trip covered Vietnam, Thailand, Laos, Thiwan and Japan. A comprehensive review of their findings has been prepared for the ICA.

Davis Running Pakistan Mill

Elmer Davis, retired paper machine superintendent of the Lebanon branch of Crown-Zellerbach Corp., has written friends that he is in Kuhlna, Pakistan, as general superintendent of a paper mill to be built there by Sandwell International, Ltd., of Vancouver, B.C.

Davis will return to America at the end of this year, and then go to Finland to superintendent the building of paper machines for the Kuhlna mill. Mrs. Davis and their son John will join him at the end of the 1958 school year.

His contract with Sandwell will expire in 1960.

Swanee Appoints VP for Sales

J. E. Bruce has been appointed vice president in charge of sales for the Swanee Paper Corp., Ransom, Pa. He was previously general sales manager of Swanee.

Bailey Retires from Westvaco

William J. Bailey, 65, vice president, has retired as an active employee of West Virginia Pulp and Paper Co. Under terms of the company's retirement plan, retirement of executives is mandatory at age 65. He will continue to serve as a director.

Mr. Bailey's timberland duties are being assumed by D. Y. Lenhart, a veteran of 20 years' service with the company's forest organization, who has been named general manager of the Timberlands and Real Estate Division. Responsibility for the company's traffic operations have been assigned to John C. Albert, general traffic manager who has been with the company since 1912.

Mr. Bailey joined the paper company as general traffic manager in 1934. He assumed responsibility for the company's timberland operations in 1942, and was elected a vice-president and director in 1944.

NEWS OF CONVERTERS

Thomas B. McCabe, Jr.

Scott Assigns New Advertising Director

Thomas B. McCabe, Jr., has been named Scott Paper Co. director of advertising. He joined Scott in 1954 to carry out a special assignment in the company's marketing research department and later recently served as a product group manager in Scott's advertising department.

Marshall Clark, former advertising director, will move to England where he will serve as resident marketing coordinator for Scott's English affiliate, Bowater-Scott Corp. Ltd. N. W. Marcus will succeed Mr. McCabe in his product group manager duties at the company's Chester, Pa., headquarters. Peter P. Miller has been named coordinator of foreign marketing of Scott affiliates in Canada and Mexico.

Russell Elston

Elston Named to N-E Potsdam Mill

Russell Elston has been named technical assistant to the resident manager of Nekoosa-Edwards Paper Co.'s mill in Potsdam, N. Y.

He has been a chemical engineer in the Nekoosa mill of Nekoosa-Edwards since May 1956.

Ward Planning New Plant

Ward Paper Box Co. will open a new manufacturing plant in the Fairfax district of Kansas City in January.

Permit for construction of the plant and office building—to be located at 3180 Chrysler Rd.—has been issued by the county planning board.

The Flett Construction Co. has the building contract.

Louis L. Ward, president of the company, said that the plant, now located at 2420 Broadway, Kansas City, Mo., will be closed with the opening of the new plant in Fairfax.

The one-story building will cost an estimated $250,000 when completed. It will be a concrete block structure with brick veneer.

An estimated 25,000 sq. ft. will be devoted to office space and another 20,000 sq. ft. devoted to manufacturing.

Cottrell Enlarges Web Offset Group

Herbert A. Asten has been appointed to the newly created post of Manager—Web Offset Sales for Cottrell Co., Harris-Intertype Corporation, Cottrell's parent company.

At the same time, the appointment of Vincent R. Stafford as Product Manager—Standard Web Offset Presses for Cottrell was announced. Both Mr. Asten and Mr. Stafford will make their headquarters at Cottrell's main plant in Westerly, Rhode Island, where the new Harris-Cottrell web offset presses are being manufactured.

Named Chief Engineer at Wrap-King

Michael Zwarycz has been promoted to chief engineer of the Wrap-King Division of Crompton & Knowles Packaging Corp., Holyoke, Mass.

Mr. Zwarycz came to Wrap-King a year ago as chief engineer of research and development after nine years with the Package Machinery Corp. of Longmeadow.

Mr. Zwarycz speaks four foreign languages, Ukrainian, Russian, Polish and Japanese, and he was a special agent in counter-intelligence work in the Far East during World War II. His parents are from the Ukraine.

Richard R. Hydeman

Elected VP of Taylor Fibre

Richard R. Hydeman has been elected vice president-manufacturing by Taylor Fibre Co., Norristown, Pa. He succeeds Harold C. Steadman, who has resigned.

Mr. Hydeman has been treasurer of the company since last January. Prior to that, he was assistant to the president. He joined Taylor in 1952 as a sales engineer.

Dairypak to Build N. J. Plant

Dairypak Inc., of Cleveland has announced plans for constructing a $750,000 plant in Hanover Ave., Morris Township, N. J., for the manufacturer of paper cartons for milk and allied products.

Scheduled for completion next March, the plant will be occupied by Dairypak and by the Butler Paper Co., a subsidiary. It will include 80,000 sq. ft. of floor space and will employ about 100 persons. It will be erected by Walter Kidde Constructors, Inc., of New York.

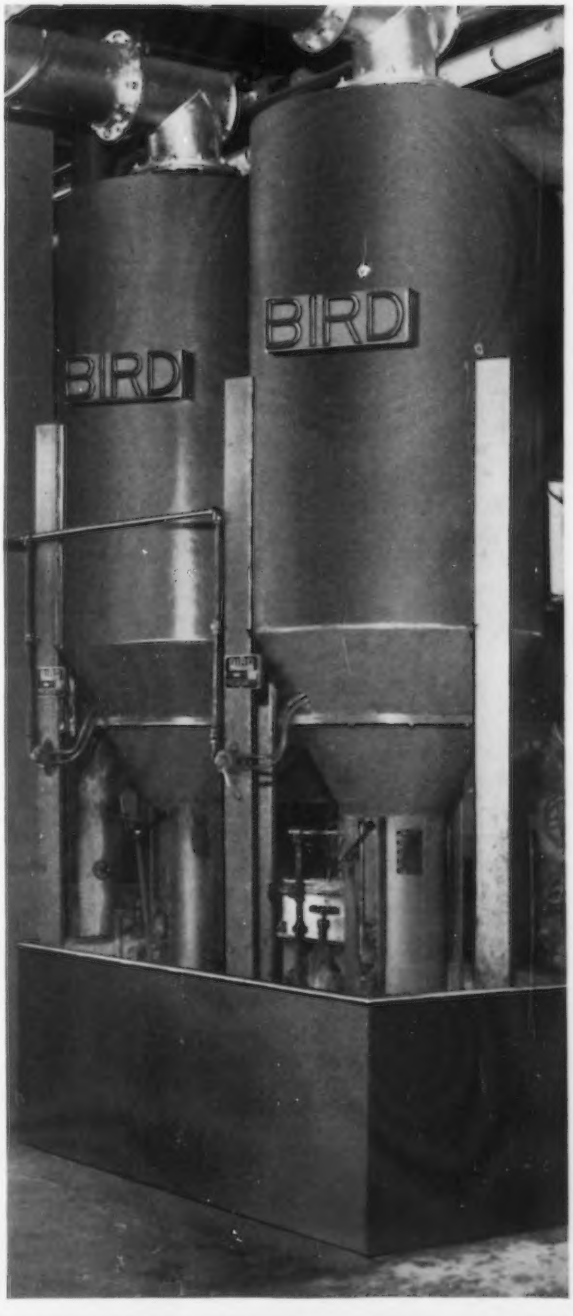
The site is a 24-acre tract, used in recent years as an automobile race track. It was acquired recently by Dairypak from the Mennen Co.

Daggett Goes to Downing Iowa Plant

Joseph A. Daggett has been named staff assistant to the general manager of the Cedar Rapids, Iowa division of the Downing Box Co., Milwaukee, Wis.

Get the Jump on the Junk

Before it can do dirt to your machines and your paper



The Bird Centriffler is the modern, low-cost way to get rid of junk and dirt *before* it gets into the papermaking system to damage expensive equipment and hurt product quality.

The Centriffler takes stock from the pulpers, diluted to about 1½%, and delivers up to 1500 gallons of cleaned stock per minute.

Feed can be by low head pump, by gravity flow or at 60 lbs. inlet pressure to discharge direct to drop-in-pressure units, such as Dirtecs, without pumping.

Dirt is removed by quick-acting manual dumping mechanism or by automatic dumping device.

BIRD MACHINE COMPANY
SOUTH WALPOLE, MASSACHUSETTS

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND CO., Limited, Montreal

BIRD CENTRIFFLER

NEW EQUIPMENT AND SUPPLIES

All-Plastic Gate Valve Now Available

Vanton Pump & Equipment Corp. has announced that it is making the first all-plastic gate valve specifically designed to meet the problems of conveying corrosive and abrasive liquids in lines that cannot be chemically contaminated.

According to the manufacturer, the new product, called the "Flex-Plug" gate valve, combines both the straight-through flow, non-pressure drop characteristic of a gate valve and the throttling, flow-control feature of a globe valve, allowing for wide versatility of application.

This new valve is immediately available in 1 in. and 2 in. sizes with screwed ends. An announcement will be made shortly about the availability of ½ in. through 4 in. sizes.

The "Flex-Plug" gate valve offered in both PVC (rigid polyvinyl chloride) and styrene-copolymer, operates by the closure of a conically shaped plug with a resilient and easily removable synthetic cap on the inside of the body. When fully open there is no obstruction to fluid flow. When partially open, the developed curved design of the flexible cap and plug allows for minimum turbulence with throttled controlled flow. The PVC line resists temperatures up to 140°F.; the styrene-copolymer up to 170°F.

The "Flex-Plug" gate valve is rated for 200 lb. working pressure. The valve performs excellently under vacuum service. Research and field tests conducted by Vanton show that seating with a resilient surface against rigid plastic materials will hold a vacuum more efficiently than a metal-to-metal seal.

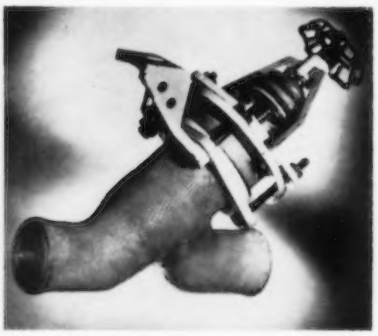
Inquiries about the new "Flex-Plug" valve should be directed to Stuart F. Cooper, Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.

New Line of Motor Starters

A new line of 2300 to 4160-volt starters (Type H) for full or reduced voltage starting, reversing or non-reversing, dynamic braking or multi-speed control of squirrel-cage, synchronous or wound rotor motors has been announced by Allis-Chalmers.

Completely front accessible, the new starter is compact and versatile with the basic unit measuring only 34 in. wide by 32 in. deep. All components of the new starter were separately tested to prove individual ratings and mechanical strength. In addition, the completed starter was successfully subjected to a 19-kv. 60-cycle dielectric test for one minute, a 60-kv. impulse test, and short circuit tests of 150,000 kva. at 2300 volts and 250,000 kva. at 4600 volts.

The new starter is available with either air break or oil immersed contactors up to 1500 hp. at 2300 volts or 3000 hp. at 4600 volts. Short circuit protection of 150,000 kva. at 2300 volts and 250,000 kva. at 4160 or 4600 volts is provided by current limiting fuses.



Y-Type Armored Glass Valve

An all glass Y-type valve which is virtually impervious to corrosion will be shown for the first time by Corning Glass Works at the 1957 Exposition of Chemical Industries.

Made of tempered Pyrex brand borosilicate glass, the new two-inch valve is corrosion resistant, compact, lightweight, tough and versatile.

All working parts of the new valve exposed to fluid are of glass or Teflon. Acidic fluids of all concentrations or compositions at temperatures as high as 250 F. can be handled by the valve. It is recommended for use in processing all acidic metallic salts, various crystalline slurries, and all acids except hydrofluoric and hot concentrated raw phosphoric acids. The new valve will fit into any system of process piping where valve corrosion and erosion are problems.

Low thermal expansion of the glass allows a sudden temperature differential through the valve of 200 F. Maximum line pressure at the valve is 50 pounds per square inch. For additional safety, the tempered glass valve body is armored with a fiber glass-polyester resin sleeve. The armor is designed to carry the same work load as the glass valve in case of failure.

The new Y-type valve can be easily mounted in any position through 360 degrees. The two-inch valve is the first of a planned line of glass valves varying in size from one to three inches.

More information may be obtained from Dow Corning Corp., 592 Saginaw Road, Midland, Mich.

Centrifugal Fans with Airfoil Blading

A new series of all purpose centrifugal fans with airfoil blading has been announced by the Westinghouse Electric Corp., Box 2278 Pittsburgh, Pa.

The complete line (Series 8000) will bring airfoil centrifugal fans in an effective range of applications including building ventilation, general air supply and exhaust, conventional and high-pressure air conditioning, industrial processing, tunnel and combustion air supply.

Most fan noise is caused by turbulent flow of air set up by conventional flat blades. Airfoil, blading on the new fan line creates streamlined air flow pattern and makes possible quieter operation. Power requirements are also much lower with the airfoil blade design thereby reducing operating costs.

The new series of centrifugal fans are available in standard AMCA (NAFM) sizes and will handle up to 700,000 c.f.m.

For economical part-load operation the fans are equipped with adjustable inlet vane control which allows precision control of the inlet volume or pressure and results in reduced operating costs at partial loads.

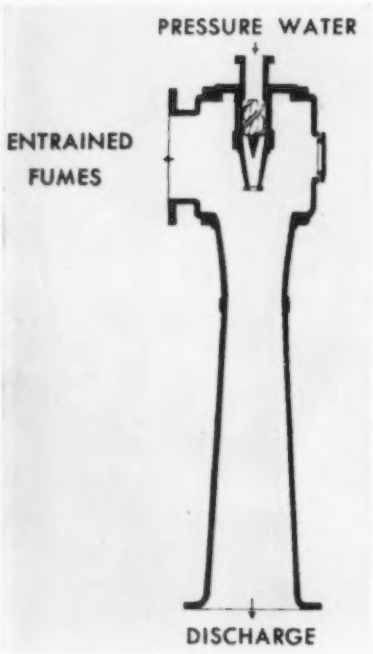
The paper mills want more!

Every paper mill that's tried this new pulp has requested additional tonnage!

HERE'S WHY: Alberta Hi-Brite bleached kraft pulp provides the superior qualities a paper needs in today's highly competitive market—*brightness, strength, cleanliness, opacity, forming properties, high viscosity!* And, you're assured a steady, on-the-continent supply of Alberta Hi-Brite! It's made in a new Canadian pulp mill that uses the most modern techniques and equipment . . . and draws from 2,000,000 acres of spruce and lodgepole timberland granted by the province of Alberta.

Order *your* cars from your St. Regis pulp representative or write: Dept. PT-1157, Kraft Division, St. Regis Paper Company, 150 East 42nd Street, New York 17, N. Y.

St.Regis PAPER COMPANY
150 EAST 42ND STREET, NEW YORK 17, N. Y.
PULP PAPER PACKAGING PLASTICS



Fume Scrubber Simplifies Fume and Dust Control

Whether motivated by legislation, or progressive company policy, most manufacturing firms aim at being good "industrial neighbors." Where the objective is to eliminate obnoxious fumes or dusts at their source, and control stream or air pollution, the job often can be done by the Schutte and Koerting fume scrubber.

In operation pressure water (160 g.p.m. at 80 p.s.i.g.) enters through the spray nozzle. Fumes to be scrubbed enter at a 14 in. suction intake induced by the drawing action of the water spray velocity. Intimate contact and diffusion between fumes and water takes place within the chamber. The discharge liquid passes to a customer-made separator from which noncondensable washed gases are vented to the atmosphere. Scrubbing water is recirculated to the unit. The entire system, it is reported, is characterized by low initial cost, low operating costs, minimum supervision and maintenance, and high efficiency.

Operating versatility stems from the fact that liquids other than water may be utilized as the scrubbing medium, depending upon the nature of the fumes. Also, the nozzle imparts an angle of spray which is optimum for entrainment and scrubbing efficiency under varying conditions.

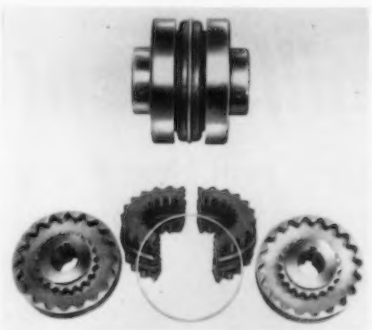
The scrubber described here is stocked in a number of sizes, and in such materials as cast iron, rubber lined with rubber nozzle, Haveg and Stoneware. This type and other scrubbing units are fully described in Bulletin 4R which also explains how these types are used in scrubbing fumes which may consist of solid particles, liquid particles, or gases. Free copies of this literature is available from Dept. JA-5, Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.

Flexible Coupling Features Rubber Toothed Sleeve

For use wherever mechanical power is to be transmitted, the new "Sure-Flex" flexible coupling has only three basic parts: two hub flanges and a two-piece rubber sleeve. The internal and external teeth of the flexible sleeve mate with the flange hub teeth and lock tight under torque load without clamps or screws. The elastic rubber sleeve with two planes of engagement absorbs both angular and parallel misalignment. There are no rubbing or wearing surfaces and hence no need for lubrication.

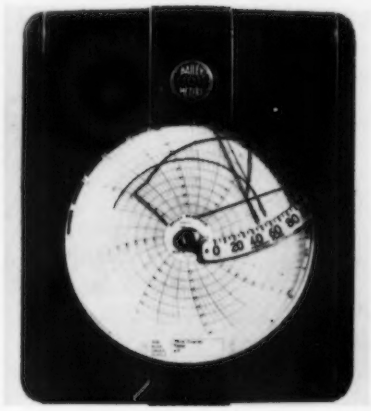
Shock vibrations are absorbed and prevented from being transmitted by the coupling sleeve. This high torsional flexibility of approximately 15 degrees at peak torque provides smooth power transmission. According to the manufacturer "Sure-Flex" couplings are designed to tolerate, without wear, internal abuse or high resisting forces, angular misalignment of up to one degree, parallel misalignment of from 1/32 to 1/16 in., depending on shaft size, and free end-float up to ⅛ in., depending on size.

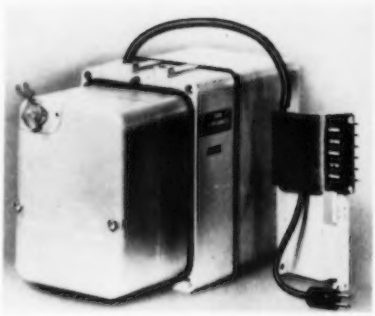
Final assembly of the coupling can be made without tools of any kind.



Shaft alignment is checked from the precisioned-machined flanges. Halves of the split rubber sleeve slip axially into place. A retaining ring may be added to hold the split sleeve for high-speed operation.

"Sure-Flex" couplings are presently supplied in six sizes for motors from 3 to 80 hp. Shaft bores are available from ⅝ to 2¼ in. T. B. Wood's Sons Co., Chambersburg, Pa.





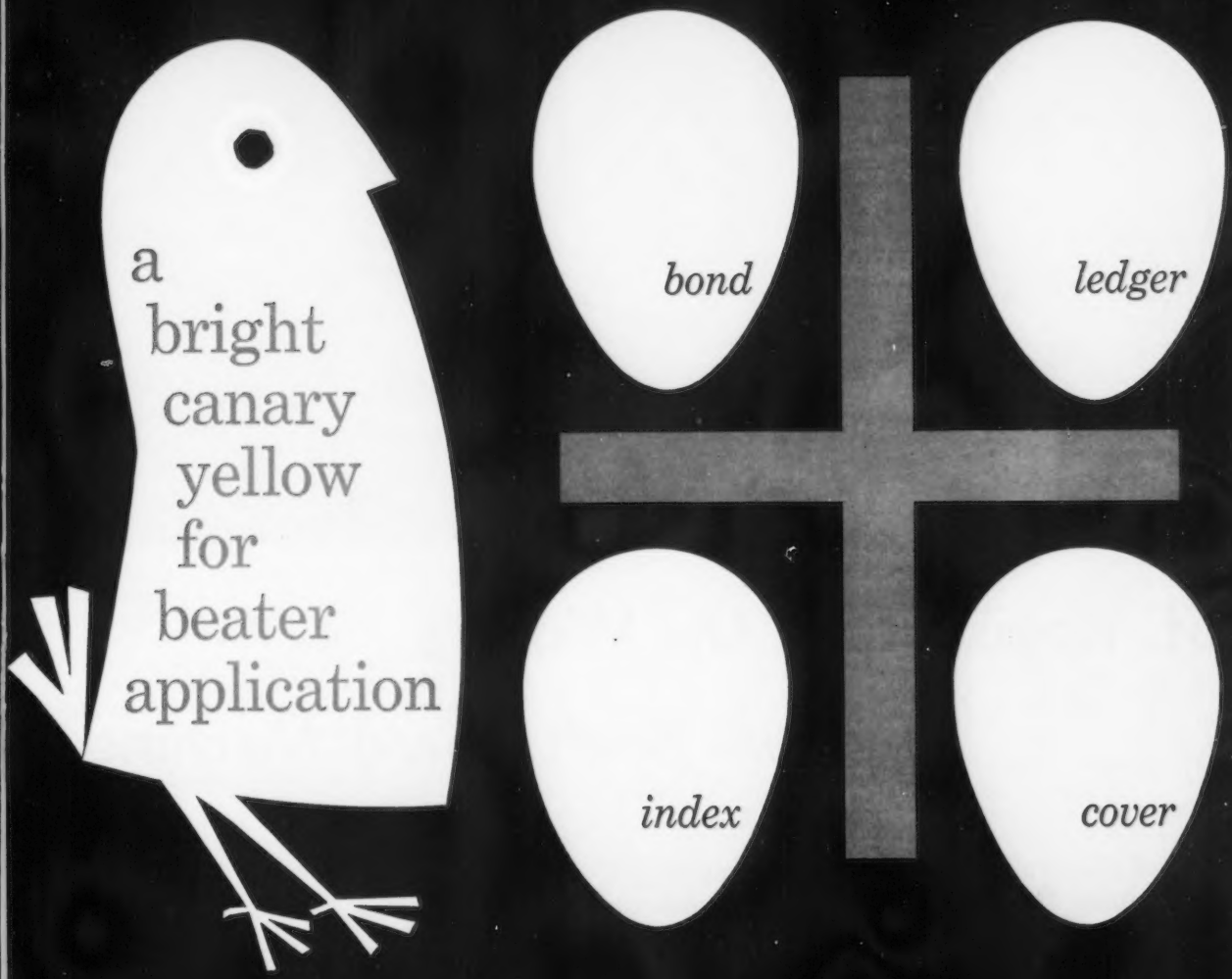
New Program Controller Simplifies Mill Operation

Pulp and paper mill operation is being simplified by the receiving, recording, and programming process variables within a single recorder case. This is possible through the use of the new "plug-in" program controller developed by Bailey Meter Co., 1050 Ivanhoe Road, Cleveland 10, Ohio, in conjunction with the company's new receiver-recorder.

A set-point signal for controlling the process variable is produced in accordance with the shape of a six-inch diameter aluminum cam. This inexpensive cam is chart-printed and easily field-cut to the desired shape. During the programming cycle, one or two precision, snap-action switches for external functions may be operated at specified points as often as desired.

This program controller may be used in the operation of digesters, controlled drying or other applications where process variables must be controlled according to a fixed time schedule.

Independent motor with separate on-off switch drives program cam at a standard speed of 1, 4, 6, 8, 12, or 24 hours per revolution. Operates on 115 volts, 25, 50, or 60 cycles per second. Product Specification E99-6; available on request.



Brilliant Pure Yellow 6GS Extra Conc.

A nondusting acid dye for bond, ledger, index and cover papers

Brilliant Pure Yellow 6GS Extra Conc. may be added dry to the beater without danger of color specks. It produces bright, clear yellows with good fastness to light and very little two-sidedness.

In combination with other dyes and pigments, especially with bright blues to obtain greens, Brilliant Pure Yellow 6GS Extra Conc. acts as a fast-to-light component. Extra advantages include less tendency to burn out on contact with hot dryers, and cleaner backwaters.

Brilliant Pure Yellow 6GS Extra Conc. is only one of many dependable, easy-to-use paper dyes available from GDC. Please write or call us for information concerning these dyes or any paper dyeing problem you may have.

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Brilliant Pure Yellow 6GS Extra Conc. manufactured by the General Aniline and Film Corporation is sold outside the United States under the trademark "Fenazo Yellow XP."

St. Regis Starts Up World's Biggest Kraft Board Machine

Named the Seminole Chief, the new machine is designed to produce 1000 tons per day of containerboard. This project also includes a new kraft pulp mill, woodhandling and power facilities.

St. Regis began operation of its new kraft paperboard machine, the "Seminole Chief," at Jacksonville, Fla., late in September. The Seminole Chief is the largest paper machine in the south and its designed capacity of 1000 tons per day will make it the world's biggest board producer. It was built primarily to produce paperboard for corrugated containers.

St. Regis began producing kraft paper at Jacksonville in 1953 with a machine making slightly more than 300 tons a day. In its other southern mill at Pensacola, Fla., production averages about 750 tons a day.

The expansion, begun more than two years ago, alongside the first machine on the 200-acre tract in the Eastport district, includes a pulp mill and enlarged power and wood handling facilities. Start-up of the machine completes for the time being St. Regis expansion in the South, which has been almost continuous since the company began operations at Pensacola in 1946.

Stevenson and Rubens carried out the engineering work on the structural and architectural design and layout and process arrangements for the stock preparation, paper mill and roll storage areas. Electrical engineering drawings for these areas were prepared by the electrical group of St. Regis staff engineering. J. E. Sirrine Co. carried out the engineering work on the structural and architectural design and layout and process arrangements for the pulp mill and power plant. Field layout and inspection on the entire project was by J. E. Sirrine Co.

The new pulp mill includes a digester room 70 feet high, 30 feet wide and 144 feet long, containing eight digesters 12 feet in diameter and 46 feet high, a washer room 70 feet high, 118 feet wide and 110 feet long with three lines of three-stage washers, and a screen room building 75 feet high by 54 feet long.

Facilities to handle the increased supply of wood fiber, in the form of pulpwood and chips, both softwood and hardwood, include two new rail spurs, two flumes, two barking drums, five new chip storage silos and chip unloading facilities for both rail cars and highway vehicles.

Newly-installed electric power gives 50,000 horsepower of motor connected load. Five new boilers were installed and a 30,000 kw. turbogenerator. The total generating capacity of 53,000 kva. is enough to supply a city of 52,000.

Built by Beloit Iron Works, Beloit, Wis., the new fourdrinier machine has a removable wire 276 inches wide and 165 feet long and is built for speeds up to 2,500 feet per minute. The "Seminole Chief" has three press sections and 123 dryers, all 60 inches in diameter. The totally enclosed machine hood, 360

feet long, is of insulated aluminum panel construction. The finishing room is a 240-foot extension of the 660-foot machine room. Roll stock can be stored in stacks 40 feet high in a 162 by 360-foot warehouse which is connected by conveyors to the finishing room.

Wood Handling

For the additional storage and wood handling facilities, two flumes were added, and the adjacent paved storage areas were lengthened. One 500-foot steel-lined flume was installed between the two existing flumes and one 860-foot flume added east of the existing installation. The receiving area was paved with asphalt concrete. With the addition of two railroad spurs, pulpwood is handled from rack car or trucks, to storage or flumes directly by two Manitowoc 3900-B crawler cranes with Mack one-cord orange peel grapple supplied by M. D. Moody and Sons. In addition, a Lorain 17-½ ton rubber-tire-mounted crane, with wood rake attachment, was supplied by Finn Machinery Co. Water is handled in new flume systems through two 16,000 g.p.m. Worthington flume pumps belt-driven by 100 h.p. motors. Grit and traveling screen for solids and bark removal are of Link-Belt manufacture and the high pressure shower pump is of Gould design, driven by 75 h.p. motor.

Two barking drums, supplied by Fibre Making Process Co., were erected. These drums are 12 feet in diameter by 67½ feet in length, each driven by 150 h.p. and 75 h.p. motors. Bark removal is handled through Link-Belt conveyors to two Gruendler 42 inch by 72 inch bark shredders for belt conveyance to bark burning boiler. Excess bark can be stored in a 70-foot diameter paved area for future reclaimance through payloader to boiler conveyor.

Debarked wood is conveyed to two Murrco 104-inch ten-knife chippers, with card breaking arrangement, by D. J. Murray Manufacturing Co., each being driven by 1000 h.p., 360 r.p.m. direct-connected General Electric synchronous motors. Chips are discharged to a 48-inch belt conveyor for ultimate distribution to five new and three existing chip silos 42 feet in diameter by 65 feet high, furnished and erected by Chicago Bridge and Iron Co.

Purchased chips unloading facilities were installed to handle truck or train shipments by means of a structural frame over a pit-installed Link-Belt chain conveying system and, overhead crane trolley (15 ton) for trailer dumping by Ederer Engineering Co. and Hewitt-Robbins Car shakeout. Chips are conveyed through the woodroom for discharge to silo feed belt conveyors.

Two of the chip silos have been arranged to handle hardwood chips. Five

Expanded woodhandling facilities include new rail spurs, two barking drums, more chip silos and chip unloading facilities for rail cars and trucks.

17-foot diameter Link-Belt rotary chip feeders (15,000 cubic feet cap./hr) at the bottom of the chip silo cones, deliver the chips through a 48 inch, 435 f.p.m. belt conveyor to the digester building. Near the discharge end a Merrick Weightometer was installed and a magnetic pulley for metal removal.

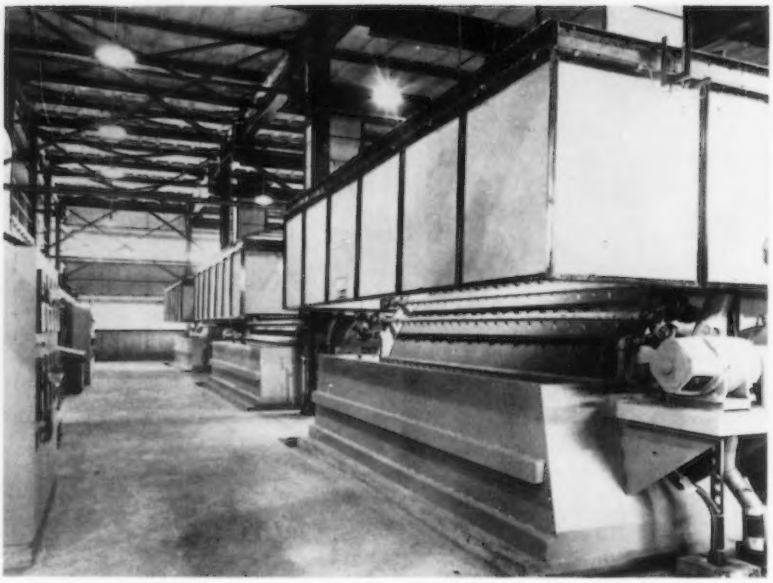
Pulp Mill

For additional digester space, a 70 feet high by 30 feet wide by 144 feet long addition was added to the east end of the present building. Eight digesters, 12 feet diameter by 46 feet high by 2 inches nominal thickness, 4000 cubic feet capacity were furnished by Chicago Bridge Co. Blow valves and hydraulic units were furnished by Yarnall-Waring Co. A 48 inch Link Belt conveyor is used for digester filling through tripper and chip chute arrangement. Digester controls were supplied by Mason-Neilan.

The blow tanks (24 feet diameter by 68½ feet), with Improved Machinery Co. agitators, were furnished and erected by Chicago Bridge Co. Digester heat and turpentine recovery system, consisting of blow steam condenser, accumulator tank, turpentine condenser, and decanter, circulating pumps and regulating equipment, were supplied by the Foster-Wheeler Corp.

The washer room, 110 feet long by 118 feet wide by 70 feet high, contains three lines of three stage washers— A, B and C, with the A line 11 feet 6 inches diameter by 16 feet, B line 11 feet 6 inches by 20 feet, and C line 11 feet 6 inches by 20 feet, all furnished by Improved Machinery Co., including repulpers. Two top liner Claflin pre-breakers and five base stock pre-breakers, driven by General Electric 400 h.p.

Five new chip storage silos make a total of eight. These silos are of steel construction, 42 ft. in diameter by 65 ft. high.



End of the three lines of three washers each, in the new wash room.

motors, were furnished by the Emerson Manufacturing Co. Consistency regulators are from DeZurik Shower Co. and pumps from Gould and Allis Chalmers.

Five horizontally-suspended filtrate tanks, all 17 feet diameter, were erected by Chicago Bridge within the building area. Lengths of the tanks are 152 feet, 134 feet, 116 feet and 144 feet. In the tank area adjacent to the washer room are located a foam tank (30 feet diameter by 75 feet) with Improved Machinery Co. foam breakers and weak black liquor storage tanks (30 feet diameter by 40 feet), all by Chicago Bridge.

Stock from the top liner washing line A is discharged to a Semtile midfeather chest with Improved Machinery Co. horizontal propeller-type agitators. From the chest, stock can be pumped either to the No. 1 mill or to two Bauer Brothers No. 440F-44 inch disc pressure refiners direct-connected to General Electric 600 h.p. 514 r.p.m. synchronous motors. Control is by means of Foxboro magnetic flowmeter. Flow from the refiner is to the screen mixing pump.

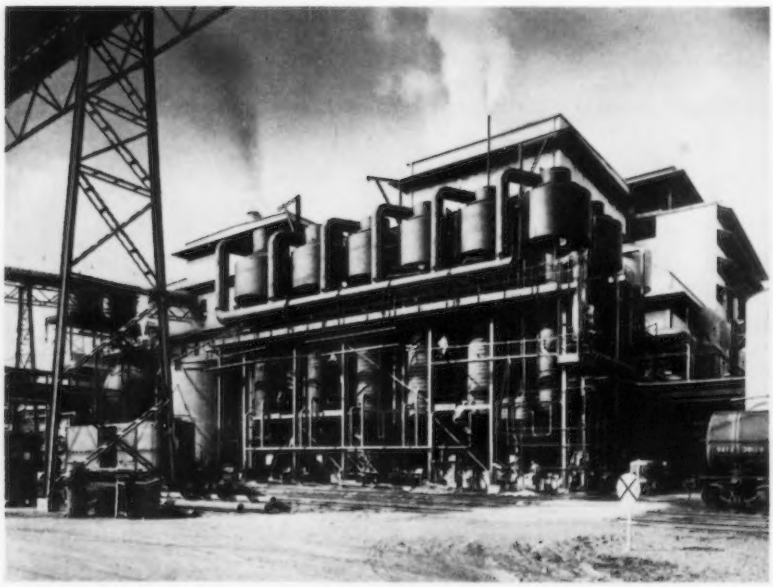
Stock from the base stock washing lines B and C is discharged to a Semtile midfeather chest with Improved Machinery Co. horizontal propeller-type agitators. From the chest, stock is pumped to three Bauer Brothers No. 440F-44 inch disc pressure refiners direct-connected to General Electric 600 h.p., 514 r.p.m. synchronous motors. Control is by means of Foxboro magnetic flowmeters. Flow from the refiners is to the screen mixing pumps.

Tile work in this, as well as other areas, was of Semtile furnished by the Stebbins Engineering and Manufacturing Co. Controls and instruments were supplied by Minneapolis-Honeywell Co.

The screen room building is 75 feet high by 54 feet long, erected as an extension to and east from the existing building. In this building were installed seven primary and three secondary Cowan screens, by Montague Machine Co. Ten primary, two secondary and one tertiary stage cleaners were supplied by Bauer Co. for use in cleaning only top liner stock. One 40 inch double disc refiner, with screw feeder and drainer conveyor, takes screen rejects which are returned to the washed stock chest. One 11 foot 6 inch diameter by 16 foot and two 11 foot 6 inch diameter by 20 foot rotary deckers were furnished by Improved Machinery Co. Decker discharge is handled through screw conveyors to Link-Belt 30 inch belt conveyors for discharge through 42 inch conveyors to five 30 foot diameter by 48 foot 4 inch Semco tile highdensity tanks (2-top liner pine, 3-base stock). Agitation for these chests, swing nozzles, circulators, etc., were furnished by Improved Machinery Co.

The refiner rejects surge chest is by Stebbins with agitation by Improved Machinery Co. Two white water chests by Stebbins are located on the ground floor of this building, with white water and stock pumps by Ingersoll-Rand and Allis Chalmers.

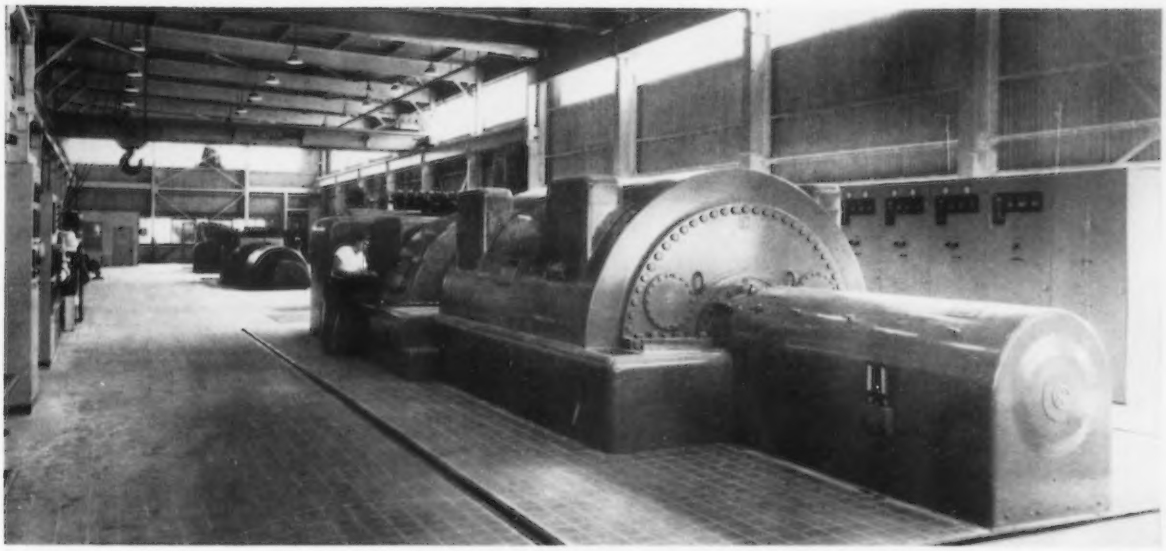
Discharge from the high-density storage chests, which are located south of the screen room, is handled through Allis Chalmers pumps to stock preparation area. Motor cooling systems are by J. O. Ross and control instruments by Minneapolis-Honeywell and Foxboro.



Two additional sets of sextuple effect evaporators were installed.

Chemical Recovery and Liquor Making

Two additional lines of sextuple-effect evaporators were furnished by Goslin-Birmingham Co. Labour and Worthington pumps are used for pumping liquor and condensate and Viking pumps for soap handling. Cooling water for the



New hydrogen cooled 30,000 kw. generator supplements existing generators (at rear) to provide a total generating capacity of 53,000 kva.

evaporator condensers is supplied from the salt water system using Elliott back-flushing-type strainers and Gould booster pumps.

The two new recovery boilers were each designed to burn 1,150,000 pounds of dry solids per day and will produce approximately 180,000 pounds of steam per hour each, at 625 p.s.i. and 750°F. These units were furnished by Combustion Engineering, Inc., complete with auxiliary equipment, including D. J. Murray cascades which are arranged one above the other. Good control of operation is afforded by the instrumentation and control features incorporated.

In keeping with the previously-established policy regarding recovery of chemical and the abatement of odors from the recovery boiler flue gases, two additional electro-static precipitators were installed, bringing the total number of units to four. The precipitators, furnished by the Koppers Co., are arranged by means of power-driven gates so that any one unit can be out of service without affecting operations. The spare unit is kept warm at all times and ready for instant start-up.

The causticizing plant was expanded for the increased capacity by the addition of a Dorr-Oliver system. Basic equipment added included four causticizer tanks (15 feet diameter by 10 feet deep), one white liquor clarifier tank (45 feet diameter by 30 feet deep), one two-stage lime mud washer tank (45 feet diameter by 30 feet deep), two lime mud storage tanks (20 feet diameter by 20 feet deep), one green liquor clarifier tank (40 feet diameter by 24 feet deep), and one dregs washer tank (35 feet diameter by 24 feet deep). Additional capacity was also added to fresh lime and reburned lime facilities. Tank fabrication and erection in this area was primarily by Hammond Iron Works. Dorrco and Worthington pumps were used. The rotary-type lime slaker was supplied by Allis-Chalmers. Two additional 9 foot in diameter by 250 foot long Traylor lime kilns were installed. Coen oil burner equipment, Peabody gas scrubbers, Buffalo forge fans and Leeds & Northup controls were supplied as auxiliary equipment. Lime conveyors were by Chain Belt Co.

Steam Power

In planning the addition to steam power generation, it was deemed advisable to stay at the same pressure and temperature levels as the original steam generating system. New boilers were designed for 700 p.s.i. and operation and 625 p.s.i. and 750°F. A total of five new Combustion Engineering boilers were installed—two new power boilers rated at 200,000 lbs/hr. each, one new bark boiler rated at 135,000 lbs/hr. and two new recovery boilers capable of producing approximately 180,000 lbs/hr. each.

The power boilers are of Combustion's "VU 50B" design and are fuel oil fired with provision for possible future gas firing. Bark and recovery boilers are equipped with auxiliary oil burners. An additional 30,000 barrel fuel oil storage tank was installed with fuel heating and pumping station supplied by Peabody Engineering Corp.

The bark boiler is equipped with a Miller-Hofft Co. bark storage bin and multiple screw type bark feeding machinery driven by variable speed drive units. The bark distributors and continuous discharge spreader stoker are also controlled by variable speed drives. Fly ash is collected by a Western Precipitator Corp., multiclone-type mechanical dust collector. Ash handling and fly ash reinjection systems were supplied by United Conveyor Corp.

Continuous blowdown system was supplied by Cochrane Corp. and continuous chemical feed systems were supplied by Milton Roy Co. Three new boiler feed pumps were installed, Ingersoll-Rand type 6HMTA5, two of which are driven by General Electric 800 h.p. mechanical drive turbines and the third is motor-driven. The high-pressure feed water heater was purchased from Foster Wheeler Co. and a vertical tray type Cochrane deaerator was installed.

In the turbine room addition (50 feet by 100 feet), a General Electric 30,000 kw. Turbo-Generator was installed. This turbine is equipped with automatic controlled extraction at 165 p.s.i.g. and 65 p.s.i.g. and exhausts into a two-pass Westinghouse surface condenser with 19,000 square foot Westinghouse also supplied the vertical condensate pumps and the air ejector equipment. A rather extensive system of instrumentation and control features has been incorporated for the turbine operation. General appearance of the turbine has been considerably enhanced by the installation of red quarry tile floors in both the new and old sections. The new steam distribution systems are cross-tied with the old systems so that steam and/or electrical loads may be shifted between new and old equipment.

A hot process lime and ion exchange system was supplied by Graver Water Conditioning Co. for treatment of boiler make-up water. This plant has a rated

New water treatment system with storage tank at right rear.

capacity of 1000 g.p.m. and supplies make-up water for both new and old boilers. Basic equipment includes a hot process softener tank of sphericone design, four anthrefilt filters, three zeolite softeners and a brine storage basin.

Cooling water for turbine condenser, evaporator condensers and turpentine condenser is supplied from brackish river water. Capacity of river water intake was increased by the installation of additional revolving screens and two C. H. Wheeler intake pumps rated at 20,000 G.P.M. each. Salt water is supplied to mill through new 48 inch pipe line and Elliott back-flushing-type strainers are used at the turbine room and evaporators.

Compressed Air

To increase the capacity of the plant compressed air system, two type YC-2 vertical angle type Worthington air compressors with capacity of 1400 c.f.m. each were installed in the power boiler room. For instrument air, a Joy Manufacturing Co. vertical carbon ring type air compressor and an Anders Lykens air dryer were installed.

Electrical Power

The new hydrogen-cooled generator has a rating of 38,400 kva. at 30 p.s.i.g. hydrogen pressure at .85 power factor and generates at 13,800 volts. This gives a maximum total generating capacity of 53,000 kva. for the power plant. Under this expansion program, approximately 50,000 h.p. of connected motor load was installed.

With such an expansion to the electrical system it was necessary to make special provision for limiting the magnitude of possible fault currents. This required that the existing 4160 volt bus be split into two separate sections but reconnected through current-limiting reactors. The newly-installed 13,800 volt bus is connected to the existing 4160 volt buses by means of a 7500 kva. transformer and reactors.

Electrical power is distributed at 13,800 volts to the various substations where voltage is reduced to 4160 or 480 volts as required. A primary selective feeder distribution system was employed. Interlocking armoured cable with colored coded plastic sheath installed on metal trays was used extensively for feeders and motor circuits. All substations and motor control centers are installed in separately enclosed control rooms which are provided with forced ventilation systems.

Paper Mill Building

The machine room addition for housing No. 2 machine is 68 feet wide and 660 feet long. This now makes a machine room for the present mill 149 feet wide and 660 feet long. Due to the length of the machine, it became necessary to provide a new location for the stock preparation room. This was done with an addition to the east wall of the machine room, 65 feet 6 inches wide and 150 feet long. Also, for the main substation, an area 65 feet 6 inches wide and 80 feet long was provided adjoining the south wall of the new stock preparation building.

Stock Preparation Room

The building consists of two floors, basement and operating. On the basement floor are the primary and secondary machine chests, the primary high yield, secondary soft pine, secondary hardwood refiner chests, white water pit, pumps and agitators. On the operating floor are located the primary and secondary refiners, saveall-decker and deckers.

There are nine Jones 42 inch double disc refiners, each driven by a 600 h.p., 450 r.p.m. General Electric synchronous motor. Five refiners are in the primary sheet refining system arranged for parallel operation. In the secondary system are four refiners arranged for either parallel or series-parallel operation. Piping is so arranged that machines may be placed in either system. The primary refiners are fed from a primary stock refiner chest through Foxboro magnetic flowmeters, and each unit is equipped with indicating kw. meters and remote bench controls to give the operators the greatest possible control of the refining operations.

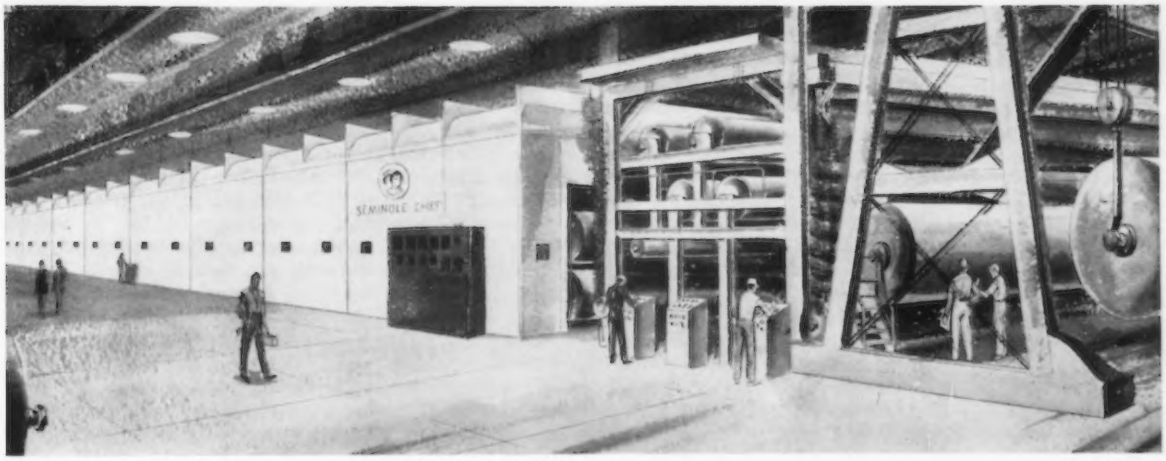
The secondary refiners are fed by pump from a tile mixing tank 6 feet in diameter by 18 feet high. Each machine is equipped with the same controls as the primary refiners. The mix tank is equipped with a vertical mixing agitator by Improved Machinery Inc. Soft cooked pine or hardwood furnish is supplied to the mixing tank separately, or a controlled mixture. The furnish is proportioned by the use of Foxboro magnetic flowmeters which act upon American Blower variable speed couplings on the stock pumps from the hardwood and/or pine supply chests.

An 11 foot 6 inch by 20 foot Improved Machinery Inc. valveless filter, with tile vat is located on the operating floor and is equipped with stainless steel head box. This machine is to serve the dual purpose of a Saveall on white water return from the machine and as a decker for thickening stock from the base stock high density chests. Between the discharge of this machine and the primary stock chest is a DeZurik consistency regulator.

Also, on the operating floor are two Improved Machinery valveless 6 feet 6 inches by 12 feet deckers for thickening hardwood and pine stock between the high density storage and supply chests. These machines are equipped with DeZurik consistency regulators between their discharge and the supply chests.

DeZurik pressure-type regulators are installed in the supply lines to both the primary and secondary refiners, thus giving step control of consistency in stock preparation system.

A 30 foot diameter tile storage chest is located at the end of the machine room, for storage of broke in slush form from the broke pulper. This chest is equipped with two midfeathers, a vertical agitator and two horizontal



The Seminole Chief, world's biggest fourdrinier liner board machine has a 169-foot wire and 123 dryers.

propeller type agitators by Improved Machinery Inc.

Five concrete stock chests, with midfeathers, and tile-lined by Stebbins Engineering and Manufacturing Co. are located in the basement, along with a tile lined white water chest. Stock chest agitators are equipped with horizontal propeller-type agitators by Improved Machinery Inc.

On the operating floor is one Shartle #6 Miami Jordan equipped with stainless steel filling and a General Electric 400 h.p., 514 r.p.m. synchronous motor. This machine is to be used in working down broke during periods when wet strength sheets are being run and is placed in the system between the broke storage chest and headbox of the Save-all-decker.

Stock pumps are furnished by Goulds Pumps, Inc., Allis-Chalmers and Ingersoll-Rand. Water pumps were supplied by Goulds Pumps, Inc., and Allis-Chalmers. Alum pumps are supplied by Duriron and the rosin emulsifier by Hercules.

All chests are lined with Semplate tile, with white tile bottoms, by the Stebbins Engineering and Manufacturing Co. Stock and white water lines are of stainless steel or transite with stainless fittings.

The stock preparation crane is of twin box girder construction design with one 12-ton trolley hoist and designed to accommodate eventually two 12-ton trolleys. This crane was made by Ederer Engineering Co.

Paper Machine

The Beloit Iron Works left hand fourdrinier machine is designed for making liner board in grades from 38# through 69#/1000 square foot basis weights at speeds to 2500 f.p.m. with lineshaft speed of 1000 r.p.m.

Stock for the primary sheet is fed from the primary machine chest through a DeZurik stuff box consistency regulator to the suction of a 50,000 g.p.m. Ingersoll-Rand fan pump direct-connected to a General Electric 1000 h.p., 360 r.p.m. synchronous motor. Stock regulation is by means of a Ferguson throttling stuff gate with remote position control from the main operating panel by means of selsyn controls.

Stock for the secondary sheet is fed from the secondary machine chest through a DeZurik stuff box consistency regulator to the suction of a 10,000 g.p.m. Ingersoll-Rand pump direct-connected to a General Electric 250 h.p., 900 r.p.m. induction motor. Stock regulation is by means of a Ferguson throttling stuff gate with remote position control from the main operating panel by means of selsyn controls.

Dilute primary stock is fed through a Beloit patented cross flow distributor, through a stainless steel rising chamber and stainless steel headless rectifier roll, to a Beloit pressure headbox equipped with two stainless steel headless rectifier rolls. Flow from the fan pump to the cross flow distributor is controlled by an air-operated stainless steel streamflow valve. Flow from the ends of the cross-flow distributor is controlled also by means of an air-operated stainless steel streamflow valve.

The dilute stock flows to the removable fourdrinier which accommodates a wire 276 inches wide and 169 feet long. The breast roll is 38 inches in diameter and the forming board is stainless steel with St. Regis Panelyte blades and mountings. The table rolls are aluminum, hard rubber-covered, with stainless deflectors, Panelyte-tipped, carried in non-shaking rails. There are twelve stainless steel suction boxes, 15 inches wide with end outlets and sloping bottoms. Six covers on the wet boxes will be equipped with Panelyte covers with slanting drilling and the six dry end boxes will be equipped with wax-impregnated end of grain maple covers. Provision is made in the fourdrinier for an additional box. Wire guide and return rolls are centrifugally-cast bronze, with the first three return rolls being driven by General Electric variable speed d.c. motors through reduction gears. The wire is driven by a 38 inch diameter bronze turning roll. The couch is bronze, 54 inch diameter providing a 20 inch wide suction area and is set level with the wire. Inside rolls need not be removed for wire changing which is accomplished by Beloit's most recent wire changing methods, using a removable fourdrinier. The stainless Saveall is attached to the fourdrinier beams, with down spouts to the wire pit. Due to the length of wire, a double stretch is provided, one being a fixed running position slack take-up roll, the other being an adjustable wire tightening roll. The Beloit high speed shake is a multiple unit driven by variable speed d.c. motor, each unit separately adjustable while operating. There is a 32 inch diameter, open end, dandy roll spirally covered with monel wire. The lumpbreaker is 34 inches diameter, 2 inch soft neoprene covered, equipped with diaphragm loading device and driven by a variable speed d.c. motor. Flat boxes are equipped with stainless steel separators and transite drop legs to a semtile white water seal pit. All flat boxes are equipped with vacuum control which may be adjusted remotely from the main operating panel.

The fourdrinier is equipped with a Valley Iron Works stainless steel secondary inlet headbox.

The wire pit is arranged to give the utmost stilling effect for release of excess air. The pit is of unusually deep design and suction inlets for the primary and secondary fan pumps are separated from the incoming white water at the Saveall pans, and from the seal pits by

a longitudinal dam on either side of the wire pit. This causes the white water to take paths the length of the fourdrinier and return under a dam through a central channel the length of the fourdrinier to the pump inlets. Overflows are provided in each end of the side channels to the couch pit. A skimming weir is provided at the end of the center channel for removing foam caused by escape of entrained air.

The wet press section is of the vertical straight through type, consisting of two presses. Each press is equipped with a 44 inch diameter rubber-covered suction roll having brass shells. Suction rolls are equipped with heavy duty antifriction bearings and constructed with air-loaded packing holder assemblies. The saveall pan is of stainless steel.

Suction rolls are all drilled with a spiral pattern to reduce the noise level. Each press is equipped with 42-inch diameter rubber covered top roll carried on swing arms with pivot parts, and necessary air-loading equipment for applying and regulating nip pressures. The presses are equipped with 18¾-inch rubber covered plain and wormed rolls, and felt conditioning equipment for each press is by Vickery, each conditioner having four jordan reverse-type heads.

The third press is a hot press and follows the first dryer section. This is a vertical press with a 44-inch diameter rubber covered suction roll having a stainless core. This roll is also spirally drilled to reduce the noise level. The top roll is 42-inch diameter rubber covered carried on swing arms with pivot parts and necessary air loading equipment for applying and regulating nip pressure. 18¾-inch diameter rubber covered plain and wormed felt rolls are provided along with a stainless saveall pan. There is one Vickery felt conditioner having four jordan-type shoes. Oscillating doctors are provided for the three press top rolls.

For water and air removal requirements, there are seven units made by Roots-Connersville Blower and furnished by Beloit as follows:

For the couch roll three compound sets each consisting of one RCV 22 inch by 56 inch and 18 inch by 42 inch direct-connected to General Electric double - extended shaft 500 h.p., 514 r.p.m. synchronous motor. For the first press one compound set of RCV 18 inch by 42 inch and 16 inch by 27 inch direct-connected to a General Electric double-extended shaft 300 h.p., 600 r.p.m. synchronous motor. For the second press and third press one set consisting of two 16 inch by 56 inch direct-connected to a General Electric double-extended shaft 500 h.p., 720 r.p.m. synchronous motor. For the suction boxes one RCV 18-inch by 42-inch direct-connected to a General Electric 200 h.p. 600 r.p.m. induction motor. For the felt conditioners one RCV 12-inch by 20-inch direct-connected to a General Electric 100 h.p. 900 r.p.m. induction motor. For the primary headbox pressure—vacuum system, one Nash L-4 direct-connected to a 30 h.p. 1800 r.p.m. motor.

The dryer section consists of 97 paper dryers and 26 felt dryers, all 60-inch diameter, arranged as follows:

1st dryer section:	9–Paper dryers 2–Return felt dryers
2nd dryer section:	17–Paper dryers 2–Return felt dryers 4–Feeney felt dryers
3rd and 4th dryer sections each:	18–Paper dryers 2–Return felt dryers 4–Feeney felt dryers
5th dryer section:	18–Paper dryers 2–Return felt dryers 2–Feeney felt dryers
6th dryer section:	17–Paper dryers 2–Return felt dryers

All dryers are for operation at 125# pressure. Dryer bearings are heavy-duty SKF spherical roller, self-aligning type drilled for center lubrication, with back bearings mounted outside the drive gears and front bearings arranged for expansion. Dryer gears are of helical design and the indrive is a small helical gear from an indrive shaft, one for each section. Each section is equipped with a motor-driven inching drive to expedite removal of wraps and installation of clothing. The dryer frames are box-type, with back frame completely enclosing gears and bearings. The back frames are provided with neoprene expansions joints to eliminate accumulative thermal expansion. All felt dryers and rolls are mounted in antifriction bearings and are driven by the felt.

Each paper and felt dryer is provided with a Beloit high-speed condensate remover and duplex steam fit. Steam and condensate connections to and from each steam fit are equipped with Barco flexible joints and each condensate connection is equipped with a sight-flow.

A size press is provided between the fifth and sixth dryer sections consisting of two 42-inch diameter rubber-covered rolls. The top roll is carried on swing arms with pivot parts and necessary air-loading equipment for applying and regulating the nip pressure.

A Beloit circulating oil system complete with roll-type filter, tanks, pumps and regulating equipment installed on the ground floor, provides lubrication to all rolls in the dryer section through oil sight feeds. Ten sump return stations also located on the ground floor are a part of this system.

A low-presure blower system is provided to maintain a slight presure in the drive gear enclosure. Lodding doctors are provided for the first nine dryers, together twith the last top dryer of all sections, first top dryer of the sixth section and all bottom dryers in the fifth section. The bottom doctors an the sixth section are of the self-threading type with arrangement for bringing air into the doctor. The last top dryer in the sixth section is air-loaded. The entire dryer section is equipped with automatic rope paper carriers.

A Ross Midwest Fulton Corp. forced vapor circulating system is installed to insure removal of condensate and noncondensible vapors from the dryers. Drying is controlled by means of Foxboro recording pressure control on the first, second, third and fifth sections, and Stamm moisture control on the fourth and sixth sections.

Following the dryer section are two Beloit open-side calendar stacks with Farreloy rolls. King rolls are 40-inch diameter, queen rolls are 24-inch diameter and intermediate rolls 18-inch diameter. Air loaded Lodding doctors and holders are provided for all rolls and the bottom doctors will oscillate. Each stock is provided with electric motor-operated roll lifts. Also provided is a Beloit lubrication system for the stacks.

Between the two stacks are four 60-inch diameter calender dryers for operation at 125 pounds presure and an automatic rope carrier system for threading.

The reel is a Beloit heavy-duty reel having 48-inch diameter constant speed drum to take a maximum 96-inch diameter reel of board. Reel spools are 24-inch diameter, equipped with heavy-duty anti-friction bearings. A brake is provided for stopping full reels, consisting of palms and air cylinder for placing pressure on the ends of the rolls.

The winder is a Beloit Model L, extra heavy duty designed for maximum operating speed of 6500 f.p.m. The two winder drums of 24-inch diameter are equipped with individual driving motors. It is also equipped with motor-driven shear-type back slitters, rider roll lift, roll ejecter and shaft puller. The backstand will accommodate a 96-inch diameter roll and wind 60-inch diameter rolls. Braking on the rewind stand is regenerative.

Pneumatic systems for the machine are served by mill supply and instrument air from the power plant. Essential air for machine operation is supplied by an Ingersoll Rand ES horizontal, single-stage, double-acting compressor driven by a General Electric motor through V belts. Provided in this system was an aftercooler with separator

and automatic condensate trap.

Stock pumps are of Allis-Chalmers and Ingersoll-Rand manufacture with white, and fresh water pumps supplied by Goulds Pumps, Inc., Allis-Chalmers and Ingersoll-Rand. Piping is stainless, or transite with stainless steel fittings.

A 60-ton machine room crane of twin-box girder design and carrying two 30-ton trolleys, with pendant control, was supplied by Ederer Engineering Co. This crane hast a span of 104 feet 4 inches. Ederer Engineering also supplied an extension to the original 58-foot 5½-inch 30-ton crane to allow it to span the same centers as the 60-ton crane. The reel crane of 28-ton capacity has a 39-foot 10 inch span with fixed hoist and is of semi-gantry type, with the gantry track being outside the machine operating area.

Air Systems

The totally-enclosed machine hood, 360 feet long including openings at the hot press and breaker stack, is of insulated aluminum panel construction on the top, and corrugated aluminum panels on front and backside enclosures, both on the operating and basement floors. The lower panels on the tending side can be opened either manually or automatically on a paper break. On a paper break all supply fans have an automatic damper for bypassing air around the heater units for personnel comfort in working under the hood. On the hood exhaust are ten 72-inch fans of the Axiflow type, located on the mezzanine floor. Supplying air to the hood enclosure are eleven silent-vane fans. All supply fans are equipped with multi-duty air filters. There are also two bottom felt supply units, a calender hood and exhaust, three heating and ventilating units, two summer ventilating units, two Ross-Grewin systems, calender cooling system, trim conveying system, winder slitter dust removal system, dry and control room and winder motor ventilation, unit substation, ventilation, wet end motor ventilation, finishing room ventilation, two machine room exhaust fans, and two wet end exhaust fans. In addition to these systems, there are three brown stock washer hoods and exhausts, ventilating system for washer and decker drive motors, washer console panels, ventilation for water treatment laboratories, screen control panels, kiln feed and firing house control rooms, and nine substation and control room systems. All heating and ventilating equipment and distribution are by J. O. Ross Engineering Corp. of New York.

Hydrapulper

A 22-foot Shartle Brothers hydrapulper is located to receive broke directly from the reel or either calender stack. It also relieves trim from the winder through ducts. A conveyor is provided to move broke from the last top dryer and also to receive broke from the machine basement enclosure to discharge directly to the hydrapulper. A stainless steel collecting hopper made by W. L. Rives Co. of Jacksonville serves the hydrapulper.

Paper Machine Drives

Beloit Iron Works supplied complete differential-type mechanical drive with separate differential gear units at the turning roll, first press, second press, hot press, size press, each of the six dryer sections, two calenders and reel. The differential units are driven by a lineshaft at 1000 f.p.m. for 2500 f.p.m. paper speed. Power for the lineshaft is furnished by a General Electric 3600 h.p., 5000/1000 r.p.m., type DRV-M25, multi-valve, multi-stage, non-condensing turbine operating with 600 p.s.i. throttle pressure discharging to the 170-pound system.

Each differential unit is supplied with power indicator units, air operated clutches, transfer cases and inshaft. A slack take-up drive is installed on the calenders and reel.

In addition to the differential drive, a General Electric variable speed d.c. helper drive is installed on the dandy roll, lumpbreaker, 54-inch couch, turning roll PIV, 1st, 2nd, 3rd wire return rolls, 1st, 2nd, hot press, and size press top rolls. A General Electric variable speed d.c. drive is installed on the calender dryers.

Finishing Room

The finishing room is a 240-foot extension to the machine building. The operating floor has been provided with storage areas for wires, wet felts, dry felts and cores for both machines. In addition to this, a complete roll handling system has been installed by Jervis B. Webb Co. of Georgia. This equipment includes on the operating floor, a collecting table from the winder with escapement mechanism for feeding complete sets of rolls to a hydraulic elevator furnished by Rotary Lift Co. The hydraulic elevator drops sets to the basement and discharges to a collecting table which is equipped with escapements to discharge single rolls to a slat conveyor at floor level. Rolls are then taken through an end banding machine supplied by Acme Steel Co. and through a system of floor level conveyors to the platform scale supplied by Toledo. After weighing, rolls are then dispatched through use of an electronic memory system to various points on the loading docks or roll storage warehouse. This system has been designed for the minimum use of manpower in the finishing and loading operation. Adjacent to the finishing room, covered loading areas have been provided which will accommodate 25 rail box cars.

Roll Storage

Adjacent to the roll loading area a roll storage warehouse has been provided. This building 162 feet by 360 feet is built at ground level with steel frame, pre-cast concrete roof and corrugated asbestos siding. In this area are two 10-ton, 73-inch span overhead electric travelling bridge cranes, cab-controlled, of the box girder section design by Ederer Engineering Co. These cranes are equipped with roll grabs by Mansaver Industries and will allow end stacking to a height of 40 feet. Also provided in this building is a section of flight conveyor by Jervis Webb Co. for conveying rolls from storage to the rail loading platform. Facilities for either rail or truck loading are available.

General Features of Construction

In general, the pulp mill buildings consist of structural steel framework on concrete foundations, with concrete floors and corrugated transite siding on steel girts. The paper mill buildings are similar except that all framing up to the machine floor is of concrete. All windows in the paper mill, chipper and turbine rooms, are H. H. Robertson Co.'s corrugated Mississippi wire glass furnished by the Pittsburgh Plate Glass Co. The pulp mill buildings and power plant have corrugated transite open canopies without windows of any kind. All major buildings have precast concrete tile roof slabs, supported on steel purlins and covered with Barrett built-up roofing.

An extension to the administration building was made to accommodate certain staff and operating groups. This building is of concrete frame, bar joist with insulated metal deck roof. Facing is of yellow brick to match the existing buildings. The interior walls are of Panelyte in mahogany grain and Virginia Metal Products Co. movable steel partitions in oak grain. Floors are of concrete with rubber tile surface.

Additions were made to the facilities building to accommodate the personnel division and provide a conference room. Also, additional locker room space has been provided for the added employees required for the expanded operations. These buildings follow the details of the original buildings.

An extension was made to the mill office to house the Enginering Department, provide added facilities for the laboratory, and additional office space for operating personnel. This construction also followed the general details of the original buildings.

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AMPGARD*

Westinghouse

high-voltage starters with

Type H air-break contactors

AMPGARD is delivered *completely* factory wired and assembled . . . just make the line and load connections . . . and you're in business. No need to wire up and assemble separate contactor units. The stationary Westinghouse contactors are easily accessible for inspection or service. Arc boxes of the Westinghouse AMPGARD starter can be quickly and easily tilted forward with one hand . . . leaving the contacts exposed and easy to reach. No need to disassemble and remove heavy, awkward arc boxes to make regular checks or perform routine service.

Westinghouse starters combine ease of service with complete, *proven* 3-way protection: system fault protection, motor protection and personnel protection. For all the facts about AMPGARD call your Westinghouse sales engineer or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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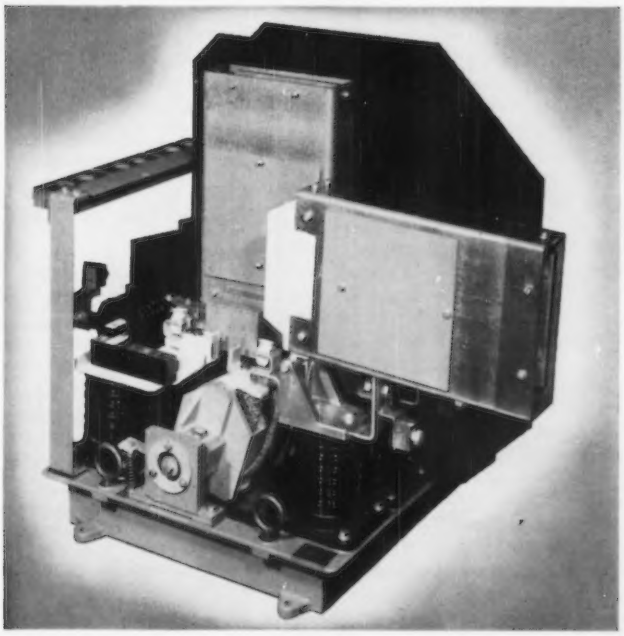


In the Type H air-break contactor, powerful dual blowout coils get arcs off the solid copper contacts and into the arc boxes immediately. There they are split, stretched and cooled between zircon refractory plates for unequaled arc quenching action . . . much longer contact life and trouble-free operation.

NEW LITERATURE

A-F ENGINEERED GRAVITY ROLLER CONVEYING SYSTEMS. (Brochure) Contains blueprints and descriptions of all parts as well as photographs of installations showing various types and combinations of this equipment. **Alvey-Ferguson Co.**, 2068 Disney St., Cincinnati 9, Ohio.

CRANE INVERTED OPEN FLOAT STEAM TRAPS. (6p Folder) Explains how this works to remove condensate and keep steam lines hot and dry. Also includes tables and instructions for selecting traps as well as a table of dimensions. **Crane Co.**, 836 S. Michigan Ave., Chicago 5, Ill.

CHEMICAL INDUSTRY PRODUCTS. (Catalogue Section S-5008) Presents basic information on each of the various types of products and refers to specific catalogue sections for complete technical data. **National Carbon Co.**, 30 E. 42nd St., New York 17, N. Y.

FACTS FOR INDUSTRY. (Series M26A Formerly 14A) Includes statistical figures for July production on pulp, paper and board in 1957, as well as six comparative tables. Price 10c. $1.00 per year. Available from **Bureau of the Census**, Washington 25, D. C.

HODAG ANTIFOAM S-118. (Information Sheet) Describes the properties and uses of Antifoam S-118 which is designed especially for industrial waste treatment plants and can be applied either manually or automatically. **Hodag Chemical Corp.**, 7247 N. Central Park, Chicago 45, Ill.

KREBS CYCLONES. (Bulletin 830) Features installation photos and performance data on many widely diversified applications of these cyclones. **Equipment Engineers Inc.**, 41 Sutter St., San Francisco 4, Calif.

"We're making a few changes in the office staff, Jones—know anything about elevators?"

LUBRICATION AND MAINTENANCE. (3-Color Chart) Includes table of recommended lubricants as well as complete instructions covering valve servicing. Also features exploded views of four types of valves. **Rockwell Mfg. Co.**, 400 N. Lexington Ave., Pittsburgh 8, Pa.

LEMOL POLYVINYL ALCOHOLS. (Bulletin M-13T) Discusses Lemols which they claim constitute a series of unique water-soluble resins produced by carefully controlled hydrolysis of polyvinyl acetates synthesized to rigidly controlled molecular weights and configurations. **Borden Co., Chemical Div.**, 350 Madison Ave., New York 17, N. Y.

NATIONAL PVC PIPE. (Bulletin 24) Includes valuable information on the properties of both high-impact and normal-impact PVC pipe, as well as graphs, charts, tables and installation information. **National Tube Div., U. S. Steel Corp.**, 525 William Penn Pl., Pittsburgh 30, Pa.

OSTER PORTABLE LIFT. (4p Brochure) Contains illustrated sales copy on these multi-purpose lifts. **Oster Mfg. Co., Materials Handling Div.**, Cleveland 32, Ohio.

ROTEX CHIP SCREENERS. (Bulletin 705) Offers a concise look at the wide range of chip screening models. Model 72, the largest, is designed to meet the demands of today's modern pulp and paper mills. **Orville Simpson Co.**, 1230 Knowlton St., Cincinnati 23, Ohio.

ROLL DESIGN CONSIDERING CRITICAL SPEED. (Report 13) Provides a mathematical formula for determining the first critical speed of a roll. Also gives two examples showing how correct design can raise or lower the operating speed to eliminate the possibility of serious vibrations. **Rodney Hunt Machine Co.**, Orange, Mass.

SCHENECTADY RESINS FOR THE PAPER INDUSTRY. (Technical Bulletin 10) Discusses beater addition and paper treatment resins. **Schenectady Resins, Div. of Schenectady Varnish Co., Inc.**, Schenectady, N. Y.

WESTINGHOUSE STEAM HEATING COILS. (Catalogue 1710) Contains pictures and descriptions of commercial and industrial coils. Also provides piping diagrams and many performance and selection tables. **Westinghouse Sturtevant Div., Dept. T-371**, 200 Readville St., Hyde Park, Boston 36, Mass.

WARNER ELECTRIC BRAKES AND CLUTCHES. (Catalogue Digest WEB 6292) Gives easy to read facts about electric brakes, clutches and controls for miniature mechanisms or high torque machine drives. **Warner Electric Brake & Clutch Co.**, Beloit, Wis.

WOOD PULP STATISTICS. (247p Book) Presents the historical record of wood pulp supply and requirements in the major producing and consuming countries of the world. This book has brought together for ready reference, information basic to an understanding of world pulp and paper markets in such a form that will facilitate economic analysis and focus attention on basic trends and relationships. Price $10.00. **U. S. Pulp Producers Assn., Inc.**, 122 E. 42nd St., New York 17, N. Y.

Swanee Paper Gets Excellent Results On Wire Patching

B. J. Twisdale,
Supt. and Technical Director
Swanee Paper Corp., Ransom, Pa.

Swanee Paper Corp. has been using with considerably success for the past two years a wire patching method introduced to this country from Europe. Holes developed in the paper machine wire may be quickly repaired by this method and, a patch properly applied lasts for the life of the wire at any speed, and does not harm the sheet nor impair drainage.

Our experience has shown that over 90 per cent of our patches have been applied successfully. The patches have lasted over ten days on a machine running 1800 feet per minute, and in many cases patches have outlasted the life of the wire.

Briefly, the method consists of die cutting a neat rectangular hole in the wire to be repaired, and inserting a wire patch closely approximating dimensions of the hole. Both the patch and the wire to be repaired should be matched in respect to amount of wear and continuity of the wire pattern. Using a special silver alloy and acid mixture the patch is then soldered in place and milled lightly.

Our patching technician, Robert Winters, is thoroughly versed in the technique and is able to perform the operation in 10-15 minutes. I would like to emphasize here that all patching at Swanee Paper is done by one man rather than several, since it is felt that the work requires a thoroughly skilled man with good eyesight and a steady hand.

This wire patching method was developed by a young Swedish chemist, Sven A. Johansson, and has found increasing use in the Scandinavian countries since 1939. Since that time paper mills in these countries have saved thousands of wires using this system. More recently introduced into this country, the method has been in use at our company for two years, and we have unquestionably obtained prolonged wire life. It has ended the days of removing the wire after a few hours of operation due to the development of a hole in the wire.

Details of the Johansson Method

This wire patching method requires special materials and equipment which are supplied in kit form by the Continental Wire Service, P. O. Box 6349, Minneapolis, Minn. Included in the kit are a special silver alloy and acid, and a special gas blowpipe as well as a one inch square die for cutting holes to the exact required dimension. For larger holes a cutting chisel is used. The alloy and acid are designed for this wire patching method and allow the repair of any papermaking wire.

A description of the Johansson method follows:

1. The machine wire is run so that the hole to be repaired stops between suction boxes. A brass plate 24 inches long, 12 inches wide, and ¼ inch thick is then fastened securely between the suction boxes and below the hole.

2. The piece of wire to be repaired must be absolutely dry, and this is done by applying partially dry paper pulp to it to absorb the moisture.

3. Then, using the special die or chisel (depending on the size of the hole), the hole that is to be repaired is cut out along two parallel lines of the diagonal wire pattern, and the other two sides are cut so that the corners fall approximately at the same thread in the running direction of the wire.

4. Next, a piece of wire is chosen for patching material. The patching piece should be worn to about the same extent as the wire being repaired. (We retain sections of old wires for this purpose.)

Placing the piece of patching wire over the hole, the patch is then cut as close to the edges as possible. The patch when placed in the hole, should not fit too tightly, but should give a close fit. If the patch is not properly cut, flaws may form in the wire resulting in flapping and involving the risk of excessive wear. Also the corners of the patch should be handled with special care, as small holes may otherwise develop. These small holes would be disadvantageous both in regard to durability of the patch and marking of the paper.

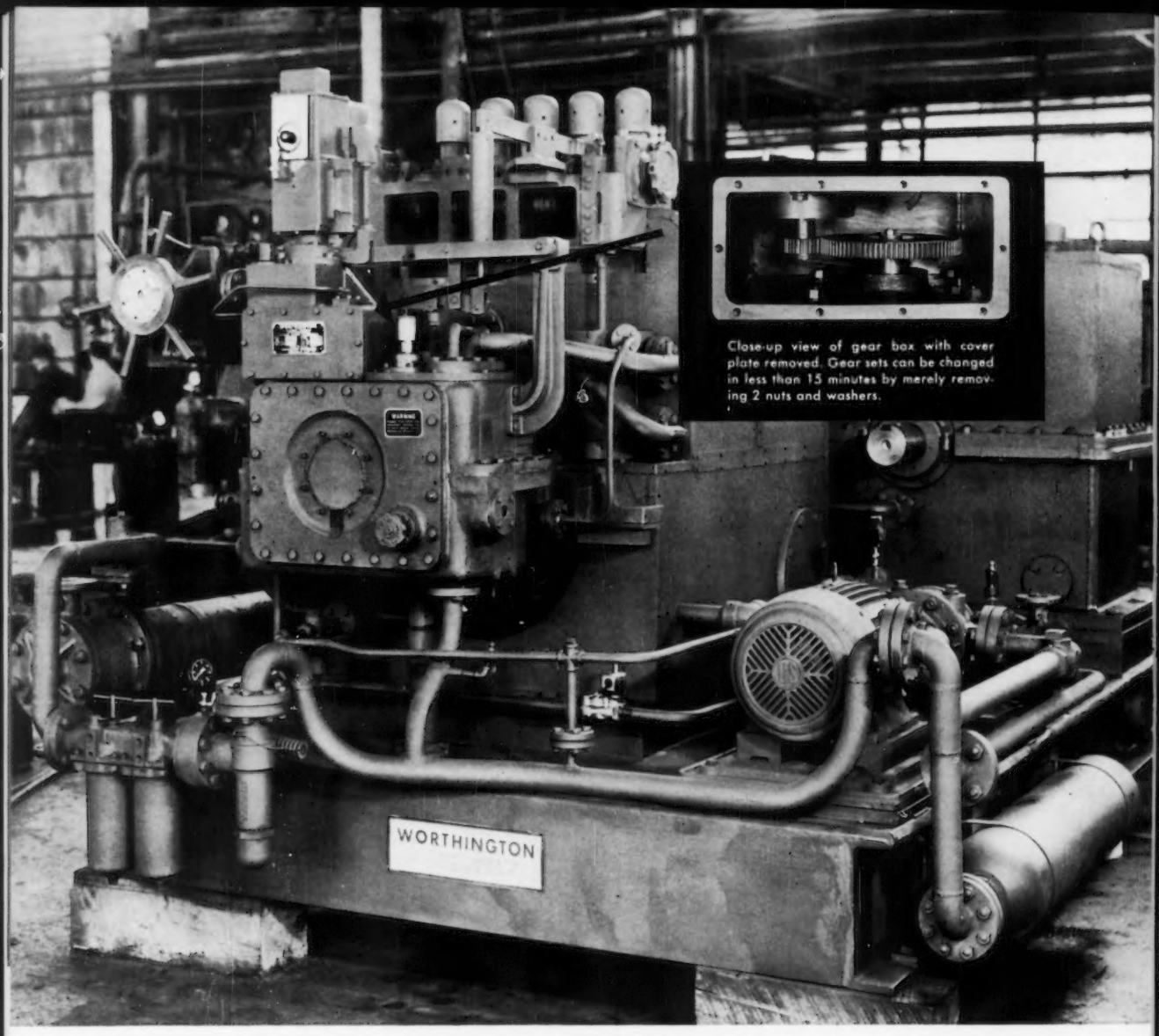
5. The patch is now placed in the hole on top of at least three layers of wire padding which is secured to the brass plate below. This wire padding allows the heat used in the process to be quickly dissipated. A stainless steel plate, 4 inches long by 2 inches wide, having a ¼ inch by 3 inch slit, is then placed over the seam to be soldered. It is important that the soldering seam be located in the center of the slit, and that the two sides of the wire to be soldered together are in the same plane. If one side is higher than the other, burning may result. Care must also be taken in regard to the corners since these are especially sensitive to heat, and serious damage may be caused which may be very difficult to repair.

6. Using the gas blowpipe supplied in the kit, the flame is passed over the soldering seam in order to burn any paper fiber that may remain in the wire, thereby cleaning it. Care must be taken to obtain the correct gas mixture with a slight surplus of acetylene gas. Then, again checking that the two edges are in the same plane, the silver is added. The special silver alloy which is ready-mixed with the acid, should be applied in a narrow fine line. It is important that it be applied all along the seam in order that there be no points that do not hold. Again, it is particularly important to pay attention to the corners. Note: The silver must not come in contact with any fatty or oily material.

7. Soldering is done with the same gas mixture as used for cleaning the wire, described above. Passing the blowpipe flame slowly 10-12 mm. above the wire and in the center of the slit in the stainless steel plate, soldering is started in the middle of the seam, working toward the corners, quickly turning the blowpipe aside there in order to avoid too heavy soldering at the corners. The blowpipe is passed over the seam slowly enough to see the silver solder appear as a silver glitter. It is of advantage to solder all the silver at once, as otherwise the heat may spread in the wire, causing tension, formation of flaws, etc.

8. In the above manner all four edges of the patch are soldered to the corresponding edge of the hole in the machine wire. After completion of the soldering operation, the wire padding and slotted plate are removed, and the soldering seams lightly milled so that no difference in level is noticeable. Care must be taken that milling is not too heavy, or flaws may be formed causing deformities in the screen.

We believe that a patch applied according to the above procedure will adhere for the duration of the wire life, and our experience has been that it will stay on any wire at any speed. Further, the patch will not leave any marks on the paper and will not impair drainage.



Close-up view of gear box with cover plate removed. Gear sets can be changed in less than 15 minutes by merely removing 2 nuts and washers.

New governor gear speed changer promises . . .

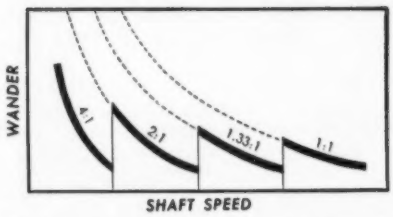
NEW FREEDOM FROM PAPER BREAKAGE

A new governor development is helping Worthington steam turbine drives provide a dramatic improvement in the smooth, steady speed essential to fine paper making. It should result in greater output, better quality, and less breakage.

The secret of this new governor improvement is the use of several gear sets with different ratios. By changing gears at lower speeds, you always operate the governor near its optimum design speed. As shown in the diagram, substantial improvement in governor control is possible.

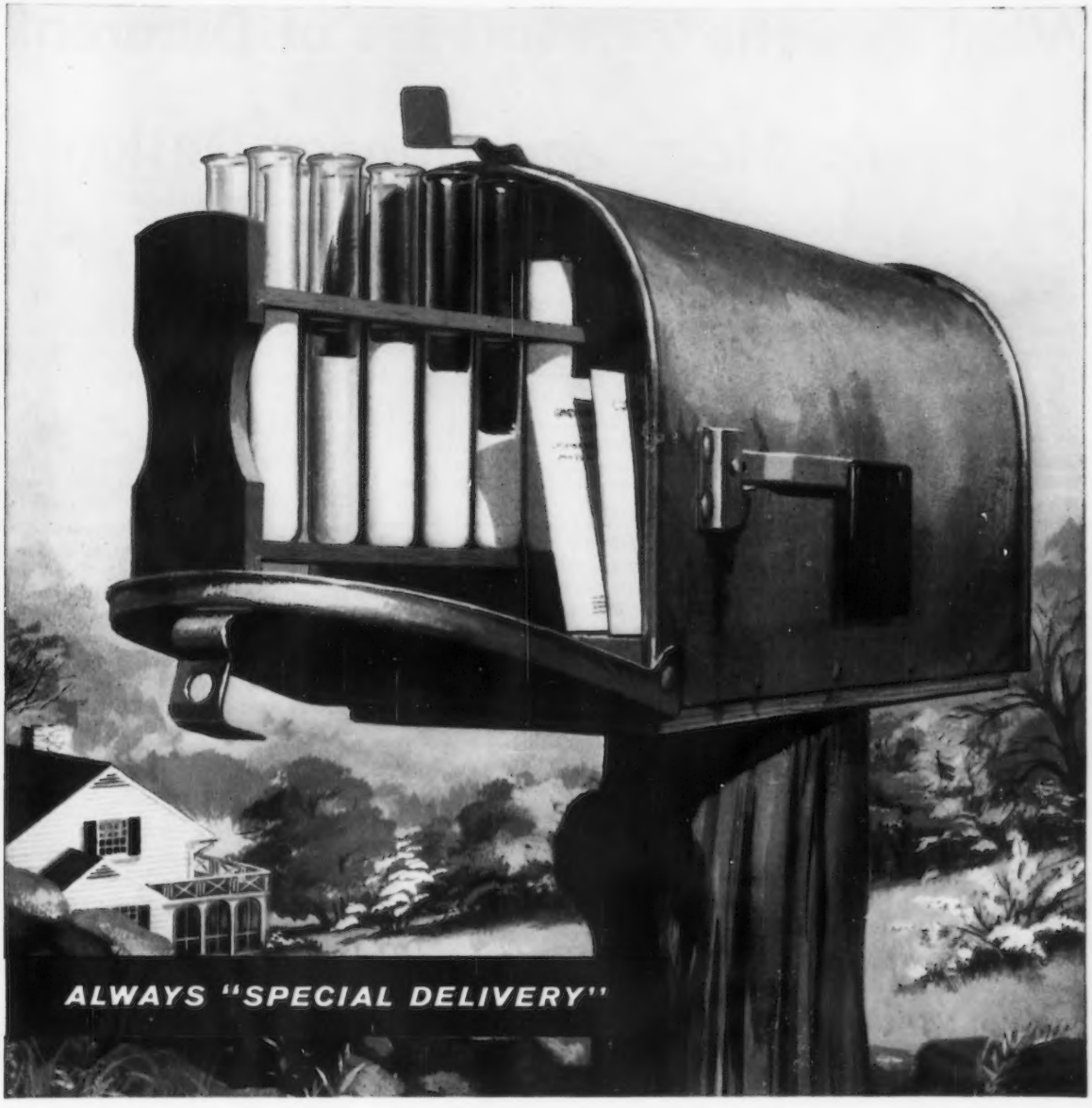
Recently installed on a 2300 hp, 1000 rpm Worthington steam turbine paper machine drive, the new system resulted in governor guarantees of one-tenth of 1% (assuming steam flow does not change more than 10% in one second.)

Your nearby Worthington District Office has more information about this dramatic improvement in steam turbine drives for paper machines. Or write to Section T-72, Worthington Corporation, Harrison, N. J. In Canada: Worthington (Canada) 1955, Ltd., Brantford, Ont. T-72



By changing gear sets at the lower shaft speeds, dramatic improvement in governor control on Worthington steam turbines is possible. Dotted lines show that speed variation (wander) is much greater on ordinary governors with fixed gear ratios.

WORTHINGTON



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1957 POLYVINYL ACETATE EMULSIONS AND SOLUTIONS, BUTADIENE/STYRENE LATICES, POLYVINYL ALCOHOL, CASEIN, WET STRENGTH RESINS

What Are the Advantages of Different Pulp Stone and Grinder Designs?

Dr. K. H. Klemm
Manager, München Dachauer Papier Fabriken
Munich, Germany

Grinders were developed along different lines in North America and in Europe. In North America today, the discontinuous Great Northern and magazine grinders predominate in the large groundwood mills and only a few small mills operate pocket grinders. Chain grinders are relatively few in number. In Europe, the continuous chain grinder has become predominant in the large mills and pocket grinders are used only in relatively small mills, while Great Northern or magazine type grinders are very seldom seen. A new design which has received attention in both North America and Europe is the ring grinder. This is also a continuous grinder.

In Figure 1, a general comparison of the different grinder types is presented. For the discontinuous grinders, the principle of the three-pocket grinder is shown in Figure 1A. Wood is fed from the sides and the pockets are filled and ground in charges. Besides the three-pocket, there are also four-pocket grinders in operation. With the magazine grinder as shown in Figure 1B, the two pockets are filled automatically from the magazines mounted above them. The Great Northern grinder operates on the same principle but differs in that the two magazines are only high enough to take one charge at a time. Hydraulic or oil pressure systems are used in all pocket-type grinders to force the wood against the stone, the rate of feed being controlled by the pressure employed. Of the continuous grinders, the chain grinder was the first and is the best known. As can be seen from Figure 1C, the wood is fed against the top of the stone by chains. The speed of these chains, which can be varied, determines the pressure between the wood and the stone. The most recent development, the ring grinder is shown in Figure 1D. With this type, the surface speed of the outer ring, which is set eccentric to the grinder stone, controls the rate of feed of the wood. The grinding pressure is not uniform but increases considerably in the direction of the nip formed by the stone and outer ring.

Preparation of English text by G. P. Chinn, Control Supt., Anglo-Newfoundland Development Co., Grand Falls, Nfld.

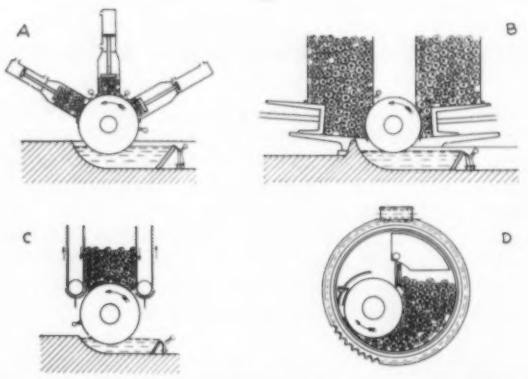

FIGURE 1—WORKING PRINCIPLES OF VARIOUS GRINDER TYPES
A—Three pocket grinder; B—Magazine grinder; C—Chain grinder; D—Ring grinder.

Chain Grinders

The chain grinder, as introduced by J. M. Voith about 1922 (1) (5), is shown in more detail in Figure 2. The wood supply is contained in a vertical magazine and is carried continuously against the stone (b) by lugged chains (a). New wood is added manually at the top. The chains are driven by an oil pressure system or an electric motor (c) and their speed controlled by a governor such that the load of electrically driven (and the shaft speed of hydraulically driven) grinders is held constant. The chains are moved by turning the cogged wheels (d) which are set on a common shaft and which, in turn, is driven by the chain mechanism. The tension of chain (e) is controlled by a counterweight (f). This chain and wheel arrangement has been replaced by gears on recent constructions. A chain tension control (g) is then required. In order that the position of the chains can be adjusted to suit the changing diameter of the stone and also to relieve the pressure on the stone for start-ups, the entire upper part of the grinder can be raised or lowered by the spindles (h) which may be fitted with hand-wheels or a Servo motor.

The grinder shaft has water-cooled bearings and is connected to the drive shaft by a flexible coupling. The sharpening lathe (i) can be moved across the stone by either an hydraulic or a mechanical drive. Two shower lines (k), one of which cleans the stone on the up-running side and the other, which serves more for flushing the pit, on the down-running side supply the dilution water. The water pressure should be 15-30 p.s.i. The weir (l) controls the level of the stock in the pit. Characteristic data for the different models of Voith chain grinders are given in Table I.

The figures in Table I are applicable for average European wood conditions;

that is, spruce wood with a moisture content (wet weight) of 20-24 per cent and newsprint quality groundwood. There have been many trials aimed at raising the production of this type of grinder by using higher loads. The experience was, however, that this is possible only at the expense of quality and energy consumption.

Figure 2B shows the construction of a modern Voith chain grinder designed to produce 37-42 tons (o.d.)/day from 4-foot wood and for a 2700-h.p. drive. The new type of gear drive for the wood chains is clearly seen (the motor is not attached). On the right is shown how the handwheel, for raising or lowering the upper part of the grinder, acts through a chain on the four spindles. The sharpening lathe is shown in the left foreground. The measurements indicated in the figure 2 B apply to the model St 1000 which has a 59-inch diameter stone and a 1340-h.p. drive (one meter wood length). Space requirements are 162 square feet to a height of 16½ feet. When related to a production of 21.0 tons (o.d.)/day, this works out to about 260 pounds per square foot of floor space. The equivalent data for the model St 3000 (71-inch stone diameter, 3300-h.p. drive, 4-foot wood) are 37.5 tons (o.d.)/day and a floor space requirement of 215 square feet.

Magazine and Great Northern Grinders

In North America, the grinder development advanced along the lines of the magazine type (2) (5). The original, the Waterous magazine grinder, was constructed for 1500-1700 h.p. loads with 4-foot wood and had a capacity of 20-22 tons (o.d.)/day. Further development led to the Waterous "Super" and the Great Northern which generally differ only in the height of the magazine. While the "Super" maintains the high magazine, with the Great Northern it is shortened to hold only the amount of wood necessary to fill one pocket (1/7 cord). The figures given in the following for Great Northern grinders are, therefore, also applicable to the "Super" magazine grinders.

Figure 3 which shows a cross section of the Great Northern grinder, indicates the principle of this design. The magazines (a) fed discontinuously are provided. The two pressure cylinders (b) are automatically controlled by a governor (c). As soon as the pressure foot has reached its extreme position near the stone, the water pressure in the cylinders (d) is switched to act away from the stone and the piston is retracted. A gate (e) which is also automatically operated closes against the wood during grinding and opens only when the piston is completely retracted.

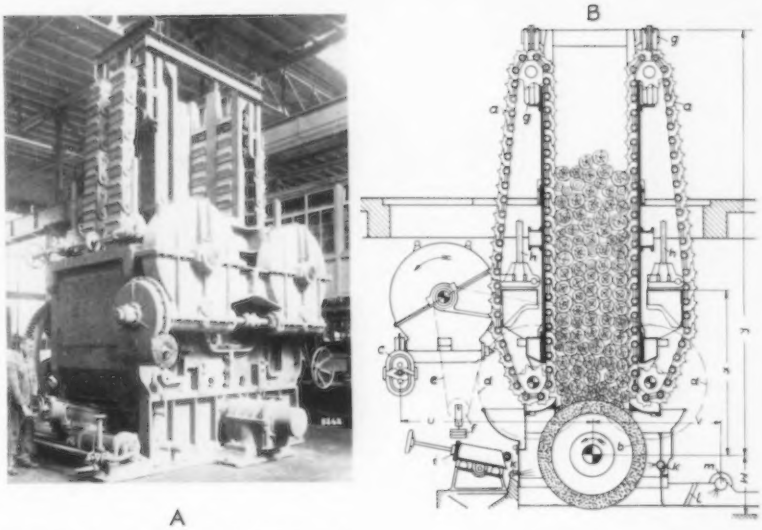

FIGURE 2—THE CHAIN GRINDER

A—Chain grinder B—Working principle
a—Chains for feed of wood; b—Stone; c—Drive for wood chains; d—Drive wheels for chain e; f—Adjustment device for drive chains; g—Adjustment device for wood chains; h—Spindles for adjustment of upper part of grinder; i—Sharpening lathe; k—White water showers; l—Weir at the grinder pit; m—Shower for dilution water; u—8.7 ft.; v—5.7 ft.; w—3.3 ft.; x—7.2 ft.; y—19.7 ft; z—width 11.1 ft.

This allows the wood in the magazine to fall into the pocket. The gate then closes and the pressure is reapplied to the piston so that the wood is pressed against the stone (f). The magazine is now ready for refilling.

Magazine grinders have adjustable finger-bars to compensate for the wear of the stone. The cylinder water pressure is controlled by a governor to hold a constant shaft speed for hydraulically driven, and constant load for electrically driven grinders. The shaft (g) is usually fitted with water-cooled bearings although roller bearings are sometimes used. It is connected by a flexible coupling to the drive shaft. The sharpening lathe (h) is set directly over the stone and is hydraulically driven. All recently manufactured lathes have a micrometer arrangement so that depth of sharpening can be better controlled. A cover (i) is fitted over the magazine on the up-running side of the stone to prevent stock from being thrown out when the pocket is open for refilling. It is also automatically operated.

The groundwood is collected in the pit (k) below the stone and overflows the weir (l) into the channel which carries it to the coarse screens. The dilution water enters through two shower pipes (m). The upper one is provided chiefly for cleaning the stone surface and the amount of water added through it is controlled by a hand valve. The quantity of water entering through the lower shower line is usually adjusted to give the pit temperature desired. All recently built magazine and Great Northern grinders have been equipped with pit temperature regulators. As will be shown later, this temperature control

TABLE I—CHARACTERISTIC DATA FOR THE DIFFERENT MODELS OF VOITH CHAIN GRINDERS

Model	Length of Grinding Zone (inches)	Stone Diameter (inches)	Recommended Shaft r.p.m.	Recommended Production tons(o.d.) day with 4-foot wood	Most Probable Freeness Can. Std.	Most Probable Specific Energy h.p. day/ton(o.d.)	Most Probable Tensile (meters)	Most Probable Motor Size (h.p.)
St 1000	39.3	59	245	24-27	100-115	53-56	2800	1650
St 2000	47.2	67	255	38-43	110-130	57-60	2500	2850
St 3000	52.7	71	265	43-48	120-155	58-61	2200	3300

For comparative purposes, all figures are based on oven dry weight and 4 foot wood regardless of the wood length normally used.

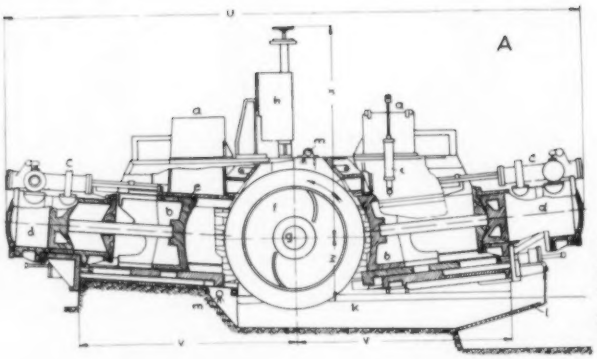

FIGURE 3 — CROSS SECTION OF THE GREAT NORTHERN GRINDER

a—Magazine; b—Pressure foot; c—Automatic operation device; d—Pressure cylinder; e—Gate; f—Stone; g—Stone shaft; h—Sharpening lathe; i—Automatic cover for magazine; k—Pit; l—Weir at the pit; m—White water shower; u—23 ft.; v—8.75 ft.; w—2.8 ft.; x—8.7 ft.; y—width 15 ft.

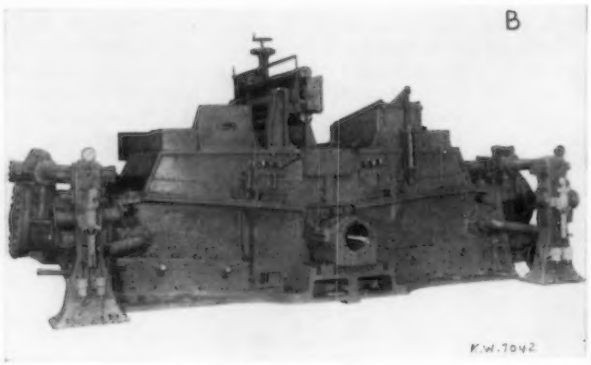

FIGURE 4 — PHOTOGRAPH OF THE GREAT NORTHERN GRINDER

TABLE II—CHARACTERISTIC DATA FOR MAGAZINE GRINDERS

Grinder Type	Length of Grinding Zone (inches)	Stone Diameter (inches)	Recommended Stone r.p.m.	Recommended Production tons (o.d.)/day, 4-ft. wood	Most Probable Freeness Can. Std.	Most Probable Specific Energy Consump. h.p. day/ton	Most Probable Tensile m.	Motor Size h.p.
Magazine	30x2	62	215	23-26	90-110	71	3200	2000
Great Northern	36x2	67	215	38-40	110-125	68.5	3200	3000

TABLE III—CHARACTERISTIC DATA FOR RING TYPE GRINDERS

Type	Length of Grinding Zone (inches)	Stone Diameter (inches)	Recommended Shaft r.p.m.	Recommended Production tons (o.d.)/day. 4 ft. wood	Most Probable Freeness Can. Std.	Most Probable Specific Energy Consump. h.p. day/ton	Most Probable Tensile m.	Motor Size h.p.
North American	60	54	356	34	95-115	76	2400	2700
Finnish	63	67	275	43	120-143	71	2000	3300

These data are again applicable for floated wood and newsprint quality groundwood.

is necessary because of the discontinuous grinding principle employed. The stock is further diluted, just following the weir, to a consistency of 1.0-1.2 per cent which is required to provide good flow in the canals.

Table II gives characteristic data for magazine grinders operating on floated wood having a moisture content of about 40 per cent and for newsprint quality groundwood. Very often, however, these grinders are operated with higher shaft speeds and lower capacities. In our mind, the data for the stone r.p.m. given on Table II are maxima, especially for Great Northern grinders which, if operated at 180 r.p.m. but higher loads, should give a higher production rate at a lower specific energy consumption.

There is a trend in recent years, to build Great Northern grinders for 5-foot wood. One mill equipped with these grinders and operating on Southern pine is producing 50 tons (o.d.)/day per grinder (40 tons with 4-foot lengths). The capacity of all magazine type grinders is held, by the discontinuous operation, to a value below the theoretical because one pocket must take the full load each time the other pocket is open for refilling. As a grinder has about 200 pocket changes per day, each requiring 22 seconds, approximately five per cent of the groundwood is produced at an extremely high load which, without doubt, is detrimental to the quality. In addition, the two pockets very often grind at different rates and this also restricts the actual production to a figure below the theoretical. This may explain why, during normal operation, the traveling rate of the wood towards the stone is considerably less with magazine than with continuous chain-type grinders. The slightly higher specific energy consumption of magazine grinders may be related to this fact*.

Figure 4 shows the construction of a modern Great Northern grinder. The sharpening lathe arrangement can be seen on the top and the automatic cover for the pocket on the up-running side of the stone is visible. Each pocket has its own governor which automatically operates the piston and gate. The only difference with magazine type grinders is that the magazines are 12 to 15 feet higher and the wood is then fed to them from the floor above. High magazines permit a considerable reduction in

* Comparative rates of feed of wood during the Initial Grinding Time are:
Type St 1000 Continuous Chain .. 39.5 microns
St 3000 Continuous Chain .. 54
Magazine (normal) 21
Great Northern 31
Data from North American mills where both chain and magazine grinders are operated show about 5 per cent higher specific energy consumption for the magazine grinders.

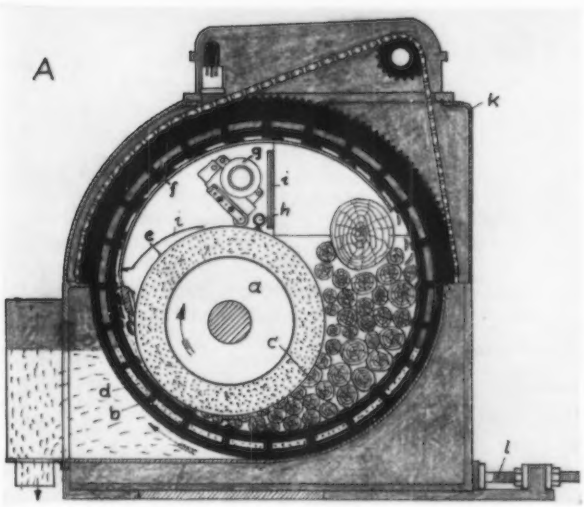

FIGURE 5—CONSTRUCTION OF TIDMARSH RING TYPE GRINDER: a—Stone; b—Ring for wood feed; c—Magazine; d—Ring channel for pulp discharge; e—Grinding of wood shives (with Roberts grinder); f—Baffle for carrying wood shives back to magazine (with Tidmarsh grinders); g—Sharpening device; h—Whitewater showers; i—Baffles; k—Mousing; l—Adjusting screws for housing.

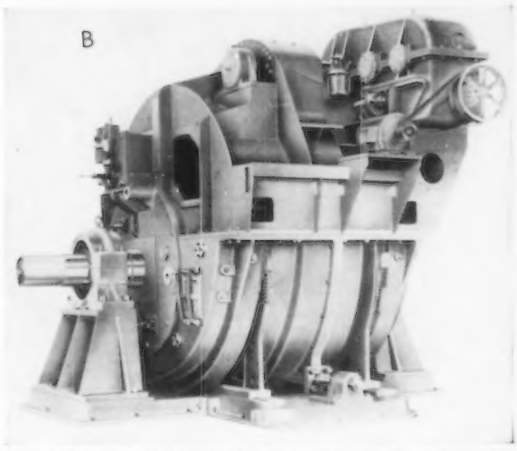

FIGURE 6—PHOTOGRAPH OF THE ROBERTS RING TYPE GRINDER.

the floor space requirements for the whole grinder room. The initial cost of the grinders and buildings is, however higher. A Great Northern grinder operating on 4-foot wood requires 335 square feet of floor space to a height of 11½ feet. When related to a daily production of 38 tons, this works out to be 227 pounds (o.d.) per square foot per day. The equivalent figure for the normal magazine grinder producing about 25 tons/day, is approximately 205 pounds (o.d.) per square foot per day.

Ring Grinders

Figure 5 shows the construction of the newest type of grinder, the ring type (3) (5). The rate of feed of the wood is controlled by the speed of the ring (b) which is set eccentric to the grinder stone (a). The ring is motor driven by a chain (Tidmarsh) or worm gear connection (Roberts). With a 54-inch stone diameter, the outer ring diameter is about 120 inches. The ring is kept in its position by 36 Ryertex bearings. The eccentric setting forms a pocket (c) between the ring and stone. The wood is fed continuously into this pocket and, therefore, there is a continuous feed to the grinding zone. The sharply decreasing cross sectional area of the pocket results in a continuously increasing pressure of the wood against the stone. This becomes very high at the "nip". Because of the relatively large grinding area (usually given as 2500 square inches for 4-foot wood), very high stone surface speeds are usually used. For example, with a 54-inch diameter stone, a shaft speed of 356 r.p.m. is equivalent to a stone surface speed of 7300 feet per minute but the Initial Grinding Time is still only 51.5 milliseconds. The groundwood leaves through the false bottom of the ring (d). Openings about one inch wide in the ring allow the stock to enter the channel discharging into the two ducts at the side. By this arrangement, the stone is submerged considerably more than with other grinder types. A further marked deviation from the usual grinding conditions is that no course splinters can leave the grinder but are ground at the up-running side of the stone (e) (Roberts) or carried by an annular channel (f) to the down-running side and fed again to the grinding area with the wood (Tidmarsh). The sharpening lathe is fitted inside the ring directly above the stone and is moved across it by a spindle. The dilution water enters through the shower line (h) to clean the stone surface. The two baffles (i) prevent the hot stock being carried around with the stone from splashing out into the feed opening. It can be seen from the schematic drawing how the adjustment is made to compensate for the wearing down of the stone diameter. The whole grinder housing (k) can be moved independently from the stone by the set screws (l) and, in this manner, the width of the nip (m), can be adjusted. The relatively large depth of submergence of the pulpstone in the stock, the grinding of the coarse splinters, and especially, the very high pressure at the pocket nip are responsible for the higher specific energy consumption of the Roberts grinder. (It is claimed that the grinding of the coarse splinters alone requires about ten per cent of the power supplied). Table III gives characteristic operating data for ring grinders.

Figure 6 shows the latest design of Roberts grinder. One advantage of this design is the high capacity at a relatively low space requirement. A grinder operating with a 54-inch diameter stone on 4-foot wood produces about 33 tons per day. As it only requires 140 square feet of floor space, the equivalent figure is 470 pounds per square foot per day. Wood feeding is somewhat more difficult as it must be done from the side and the pocket volume is relatively low. The man-hours for feeding per ton are, therefore, higher than with chain or magazine grinders.

Pocket Grinders

While the chain, ring and magazine are the predominant grinder types used at the present time in large mills, most of the installations in small mills and in medium size mills producing fine papers are pocket grinders(4)(5). Basically, the operating principle of the pocket grinder is similar to the magazine except that the latter is limited to two pockets because of the space taken up by the magazines while three and four pockets are fitted on pocket grinders. With magazine grinders, the pressure feet are operated automatically and the wood is fed into the pockets by gravity. On pocket grinders the pressure feet are operated manually and the wood must be fed from the side by hand. The manpower requirements are, therefore, higher and this may be the

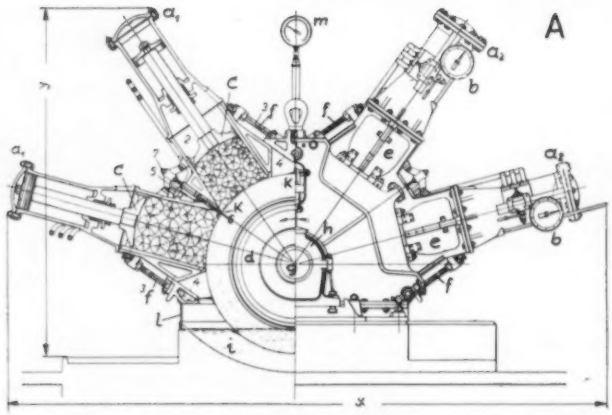

FIGURE 7—PRINCIPLE OF THE MIAG TWIN POCKET GRINDER a_1 a_2—Pairs of pressure cylinders; b—Pressure foot position indicators; c—Pressure foot; d—Stone; e—Doors for feeding of wood; f—Spindles for the adjustment of pockets; g—grinder shaft; h—Shaft bearings; i—Pit; k—White water shower; l—Door for the sharpening of the stones; m—Pressure gauge for indication of pressure; x—16.5 feet; y—10 feet; z—Width 10 feet.

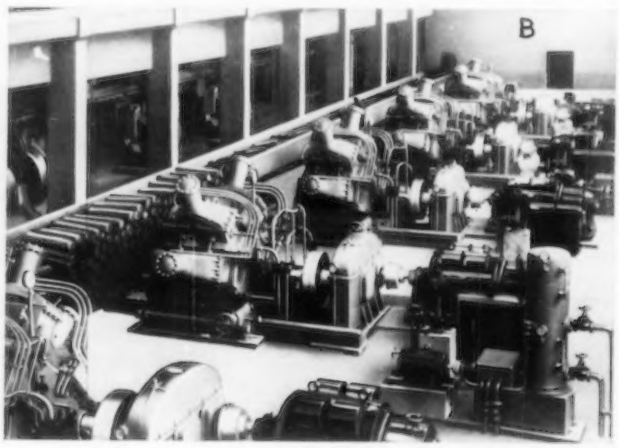

FIGURE 8—A GRINDER ROOM EQUIPPED WITH MIAG TWIN GRINDERS

main reason why the automatic magazine grinders are preferred by the large mills. However, pocket grinders are still being installed and some groundwood men consider that they produce a better grade of groundwood, especially for fine papers. When hydraulically driven, by only using some of the pockets, the grinder can be adjusted to suit the water power available. While the capacity naturally drops, this does have the advantage that the groundwood quality is only slightly changed.

Figure 7 shows a modern pocket grinder construction, the Miag "Twin Grinder." The four pockets of this design are arranged in pairs, (a_1 and a_2) and with this, a relatively large grinding area is achieved on each side of the stone. The pockets are equipped with indicators (b) which show the actual position of the pressure foot and which may be used to evaluate the rate of feed of the wood. The pressure feet (c) are activated by an oil pressure system which permits the use of iron sealing rings. After the pocket has been filled, the switch valve is changed manually and the oil pressure acts on the piston forcing the wood against the stone (d). The pockets are equipped with doors (e) which must be opened manually for feeding the wood. To adjust to the changing diameter of the stone, the pockets can be set with the aid of the spindles (f). As with most other designs, the groundwood produced is collected in the pit (i) below the stone and overflows a weir into the flume leading to the coarse screens. The large grinding area formed by the two pockets on each side of the stone is claimed to be advantageous for the production of the finer grades of groundwood. Another point said to be favorable is that the shower water can be added in the middle of the grinding zone, between the two pockets at (k). The sharpening lathe, not shown in this picture, is fitted on the down-running side of the stone where the opening (l) is provided. The oil pressure, gauge (m), is controlled by a governor which works on a principle similar to that described earlier for magazine grinders. There are several models of "Twin Grinders" which differ only in the stone width: No. 50 for 1.6-foot wood, No. 53 for 3.3-foot wood and No. 57 for 4-foot wood. The space required is 161 square feet by 10 feet high. For a newsprint groundwood capacity of 19 tons (o.d.)/day, this is equivalent to 235 pounds per square foot per day. Characteristic operating data for different groundwood grades, related to European wood conditions and 4 foot wood are given in Table IV.

Summary of Grinder Types

A summary of the characteristic operating data for the different grinder types producing normal newsprint quality groundwood is given in Table V. Although the figures shown for specific energy consumption, freeness range and tensile strength only indicate average values and may vary considerably from mill to mill, they are considered to characterize the results which most probably can be obtained.

Grinding conditions are favorable with the Voith normal grinder. The Voith Super grinder, however, with an Initial Grinding Factor of 1.55, is overloaded. This means that a great deal of refining action must take place during the grinding process in order to achieve the freeness necessary for newsprint. This is reflected by the relatively high specific energy requirements. The particularly low Initial Grinding Factor for magazine and Great Northern grinders also results in a relatively high specific energy consumption. Other factors may be the Initial Grinding Time being too low, the high rate of feed at one pocket when the other is off for refilling and, perhaps, the wood conditions in North America. The Initial Grinding Time and the rate of feed of the wood appear to be favorable with the Roberts grinders. However, it must be realized that, with this design, the rate of feed of the wood is increased from a very low value at the beginning of the pocket

to an extremely high one at the nip. This fact and the influence of the coarse splinters being ground may contribute to the relatively low strength properties of the pulp in spite of a high specific energy consumption. The Initial Grinding Time, traveling Rate of Wood and Initial Grinding Factor are all in the favorable range with the "Twin Grinder" and this is reflected in favorable results. The higher manpower and greater space requirements are the disadvantages of this grinder type.

The data given in Table V represent normal conditions and normal operation. The rate of feed of the wood can be changed by altering the load, and the Initial Grinding Time by altering the shaft speed. With some grinder types, more favorable results can be expected by changing these conditions. The selection of the grinder type is very important but must be done with regard to the conditions prevailing and the special requirements of the mill in question.

TABLE IV—CHARACTERISTIC POCKET GRINDER OPERATING DATA

Ground-wood Quality	Length of Grinding Zone (inches)	Stone Diameter (inches)	Recommended Shaft r.p.m.	Recommended Production tons (o.d.)/day, 4 ft. wood	Most Probable Freeness Can. Std.	Most Probable Specific Energy h.p. day/ton	Most Probable Tensile m.	Motor Size h.p.
Fine	39.3x2	59	250	15-16	80-95	67	3200	1250
Med. Fine	39.3x2	59	250	17.5-20	90-110	61	3200	1500
Newsprint	39.3x2	59	250	23-24	100-120	56	3000	1650
Board	39.3x2	59	250	26-28	145-170	57	2800	2000

TABLE V—CHARACTERISTIC DATA FOR DIFFERENT TYPES OF GRINDERS

Grinder Type	Chain		Magazine		Ring	Pocket
	Voith St 1000	Voith St 3000	Waterous Normal	Great Northern	Roberts	Miag Twin Grinder
Wood	European Spruce		Can. Spruce (floated)		Can. Spruce (floated)	European Spruce
Load—h.p.	1280	2600	1540	2500	2340	1650
Production—tons (o.d.)/day	22	45	21	32	30	24
Specific Energy consumption—h.p. day/ton	58.2	57.8	73.3	78.1	78.0	55.0
Production—lb/ft²/day (floor space)	260	350	200	225	470	235
Stone Diameter — inches	59	71	61	67	54	59
Shaft Speed—r.p.m.	245	245	225	240	350	250
Stone Surface Speed—ft./sec.	60.4	73.2	58.4	67.5	78.6	61.5
Length of Grinding Zone—in.	39.3	52.7	30x2	36x2	60	39.3x2
Pressure Removals/pocket/Day	—	—	104	104	—	
Loading Time/Pressure Removal—seconds	—	—	22	22	—	
Initial Grinding Time—milliseconds	52	58	43	43	60	51
Feed of Wood in Initial Grinding time—microns	41.5	62.2	17.8	23.0	36.5*	35.5
Prevailing Fiber diameter—microns	40	40	35	35	35	40
Initial Grinding Factor	1.04	1.55	0.51	0.66	1.04*	0.89
Most Probable Freeness Range—						
Can. Std.	100-115	120-155	90-110	110-125	95-115	110-120
Tensile—m.	2800	2000	3200	3000	2400	3000

* With this grinder type these data represent only an average value. These figures increase considerably as the pocket "nip" is approached.

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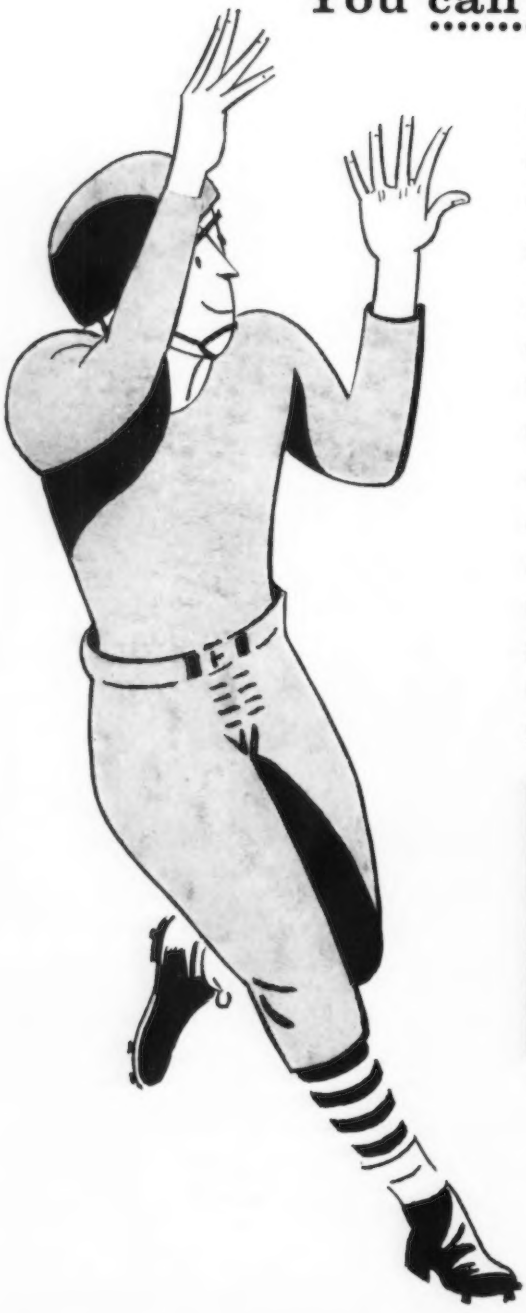

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VARIOUS TYPES—Generally speaking, stainless steels are divided into three groups: chromium, chromium nickel, and chromium-manganese-low nickel steels. Their corrosion resistance, hardenability, tensile strength, etc., varies with the proportion of chromium, nickel and other alloying elements each type contains.

The chromium stainless grades are divided into two types: martensitic steels, which are hardenable; and ferritic non-hardenable steels. Both types are magnetic. The chromium nickel and chromium-manganese-low nickel stainless grades are austenitic steels, hardenable only by coldworking, and are non-magnetic.

The principal chromium stainless steels of chemical industry significance are Types 410, 431 and 440A martensitic grades, and Types 405, 430, 442 and 446 ferritic steels. Chromium nickel austenitic steels of principal importance are Types 302, 304, 316, 317, 347, 309 and 310. In the more recently developed chromium-manganese-low nickel austenitic group, Type 202 has physical and mechanical properties closely approximating those of Type 302—with the advantage of much lower nickel content and more ready availability in times of nickel shortage.

PRINCIPAL GRADES—Industry has called for quite an extensive range of chemical and physical properties in stainless steels. To meet these requirements, types have been developed which are best suited for a particular application: such as Types 316 and 317 for extra corrosion resistance, Types 309 and 310 for extra high temperature service, etc. Knowledge of these stainless steel qualities is essential for engineers and designers to create a product that will best do the work for which it was intended. Complete data on AL Stainless Steels is available in the various publications listed below.

Of all the stainless steels, the grades most used in the chemical and allied industries are Types 304, 316, 317 and 347 chromium nickel steels. The first three grades are also available in extra low carbon varieties to meet extreme conditions of fabrication or service which might carry the threat of intergranular corrosion. Designated Types 304L, 316L and 317L, these low carbon stainless steels are practically immune to carbide precipitation in the as-welded condition. Like Type 347, they permit the field-welding and stress-relieving of material of any thickness, for example, without the hazard of intergranular corrosion.

REGULARLY SUPPLIED FORMS—Allegheny Ludlum Steel Corporation is in position to furnish the various grades of stainless steel in all of the commercial forms required by fabricators of these metals. These include:

- Plates, including formed heads
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- Strip, either coiled or straight cut lengths
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- Billets, for forging or upsetting
- Angles
- Wire
- Tubing, seamless or welded
- Castings and smooth-hammered Forgings
- Extrusions
- Clad stainless

Information as to size ranges and mill tolerances are available in literature devoted to detailed discussions of AL Stainless Steels.

SPECIAL REQUIREMENTS—When selecting a grade of corrosion and heat resisting steel for a given application, it should always be borne in mind that laboratory tests, however carefully performed, can be expected at best to be only indicative of field performance. Variations in actual service conditions are so wide that a special study of the case at hand may be necessary at times. To that end, Allegheny Ludlum engineers and technical men are available for consultation on unusual problems involving stainless applications.

FABRICATION—AL Stainless Steels may be easily fabricated by any of the usual processes—welding, drawing, blanking, machining, spinning, forging, riveting, shearing, soldering, etc. In some instances, however, care must be exercised in handling of the material to preserve its corrosion or heat resisting properties. No one should undertake to fabricate any of the stainless steels without a full understanding of these handling procedures. Proper processing is fully discussed in Allegheny Ludlum literature—available on request.

RESISTANCE TO ATTACK—There is a wide range of conditions under which AL Stainless Steels operate in resisting corrosive attack at normal and elevated temperatures. Detailed information regarding their resistance to various media, heat resistance and strength will be sent upon request. See the publication list below.

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AL Stainless Steel in Chemical Processing—36 pages on various applications, advantages, etc. of stainless in the chemical industry.

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Field Editor
Paper Trade Journal

Although registration for the second TAPPI Deinking Conference, held October 3 and 4 in Niagara Falls, N. Y. was down by 79 from last year's Kalamazoo conference, enthusiasm and the desire to share practical experience continued unabated. (Niagara Falls registration: 111. Kalamazoo registration: 190.)

The two meeting dates were packed with activity, with Thursday morning devoted to a technical session, the afternoon spent with plant visits, more plant visits on Friday morning and a second technical session on Friday afternoon. On Thursday evening the Deinking Conference met jointly with the Western New York group, Empire State Section of TAPPI, in the conference's official banquet which featured J. Homer Winkler, of Battelle Memorial Institute, as principal speaker. Friday noon's luncheon offered two reports, details of which are given below.

Conference Highlights

Major interest at the conference again centered around a piece of equipment. Where last year considerable interest had been expressed in slide-washers, also known as side-hill washers, this year's Deinking Conference expressed more interest about a new piece of dirt-removal equipment than about anything else on the program. Jointly, Newton Falls Paper Co. and Bird Machine Co. of South Walpole, Mass. for the first time publicly mentioned a new piece of machinery, known as the Bird Pressure Extractor.

An experimental model of this equipment has been installed at Newton Falls Paper Mills, Newton Falls, N. Y. The equipment caused the deinkers present to "stop, look and listen" because of claims that the Bird Pressure Extractor has proven quite successful in removing rubbery materials from deinked pulp which are still considered the deinking industry branch's major problem.

Combating latex and other rubbery, nondispersable materials in waste paper continued to occupy the deinkers. Another highlight of the conference was connected with this problem. It was generally felt and expressed publicly and privately wherever the conferees gathered that the deinking branch of the industry owes a debt of thanks to the efforts made by Ralph W. Kumler, director of the Waste Paper Utilization Council, who, with his entire group, has done much toward solving the problem during the last year. The deinking representatives were unanimous in their belief that certain grades of waste paper have been improved with respect to nondispersable rubbery materials as a result of the Waste Paper Utilization Council's efforts.

How to measure yield or losses in deinking operations continued as a subject of intent discussion. Although the subject was not tackled per se by the speakers and panels of the conference, the matter cropped up in questions, discussion and "audible wishful thinking", that someone should do something about this.

There appeared to be considerable interest in an incidental point made during one presentation. This came when M. R. Kinne, of Sealright-Oswego Falls described his mill's deinking system and mentioned intentional generation of foam during washing to aid in carrying away ink and other materials during the deinking process. While some operators reported combating foam intentionally in deinking systems there was interest in the claim that generating an unusually large amount of foam will aid in final cleansing during the deinking process.

Program and Officers

E. F. Andrews, International Paper Co., Niagara Falls, served as Deinking Conference chairman. Merle R. Wilkins, Kalamazoo Paper Co., was program chairman. The second Deinking Conference was sponsored by the TAPPI Deinking Committee, of which A. M Altieri of Tileston and Hollingsworth Co., is chairman. J. J. Forsythe, International Paper Co. is vice chairman and J. W. Morrow, Newton Falls Paper Mills, is secretary. John L. Clouse, Sr., Oxford Miami Paper Co., is immediate past chairman of the committee.

The Second TAPPI Deinking Conference program opened on Thursday morning with a panel session devoted to the theme: "Economy and Conservation Through Deinking." R. W. Kumler served as moderator. J. L. Clouse, H. Stovoroff, Buffalo Waste Paper Co., J. J. Forsythe and J. W. Morrow were panelists.

The second technical session, held on Friday afternoon, was devoted to: "Machinery and Equipment for Deinking." R. H. Doughty, Fitchburg Paper Co. served as moderator. Panelists were: W. M. Orchard, Bauer Brothers; A. Jenkins, Jr., Bird Machine Co.; F. E.

Caskey, Morden Machine Co.; A. J. Felton, Shartle Division, Black-Clawson; M. R. Kinne, Sealright - Oswego Falls Corp.; J. A. Dean, Michigan Paper Co. and W. Logan, Provincial Paper Co.

The Friday afternoon session also included two papers, one by M. R. Kinne, entitled, "Screening Report" and one by F. E. Caskey, entitled "Continuous Deinking".

Plans have been initiated to hold the Third Deinking Conference in the Hotel Biltmore, Dayton, Ohio, on September 18 and 19, 1958.

Rubber Counter

J. Wayne Morrow, Paper Mill superintendent, Newton Falls Paper Mills, and Earl W. Shaw Jr., sales engineer of Bird Machine Co., reported on an installation of a Bird Pressure Extractor at Newton Falls Mills. Their presentation was divided into two phases, how to detect the objectionable rubbery materials (with the use of a new apparatus developed at Newton Falls), and how to remove the materials (with the new Bird Pressure Extractor).

Talking first about the new latex speck detection apparatus, known as a Contamination Classifier, for deinked pulp, Mr. Murrow said: "This apparatus aids in qualitatively and quantitatively detecting those very small rubbery particles which are, as a rule, not visible in hand sheets." He referred to these specks as material which is not usually detected until dried on the paper machine with the result that "sticky spots" are created.

The newly developed apparatus dilutes deinked stock under controlled conditions, and then passes the dilute pulp slurry over a black surface. This makes it possible to detect and quantitatively determine the specks under a magnifying glass which is also part of the classifier. At Newton Falls Mills this apparatus has become known as the "rubber counter". A qualitative and semi-qualitative means of identification has been developed.

Newton Falls has found that it can predict with reasonable accuracy what to expect on the paper machine with regard to sticky spots. It is believed that the apparatus can also find useful purposes in regular pulp mills for the identification of shives and similar pulp "specks and spots." The classifier will be marketed by an instrument manufacturing company, according to an unofficial announcement made at the conference.

Pressure Extractor

The pressure extractor was described as a rather simple unit consisting of two rolls, a high pressure shower and an effluent trough. The top roll is a 3/16 inch stainless steel 80 mesh wire covered roll, described as a "simulated dandy containing a number of special construction features." This top roll is preloaded. A distributor tray gives directional flow to the nip. The bottom roll is rubber covered.

Here is how the pressure extractor works, as reported at the Deinking Conference: As the stock is passed through the nip, tacky materials (such as rubbery compounds) are forced into the dandy-like top roll and then removed into a rejection trough with the aid of high pressure shower installed inside the roll. The rejected material does not adhere to the rubber covered bottom roll (called the washer roll). Newton Falls Mills has five units of this type and it was reported that the mill is installing five additional units.

It was reported that the pressure extractor has also removed asphalt or other tar-like substances. At Newton Falls temperatures of the stock going through the pressure extractor seldom ran over 100° F. Little experience with temperature variations has been gained so far with the Newton Falls installation. The pressure extractor had its inception when its inventors observed that dandy rolls on the paper machines sometimes tend to pick up foreign materials from the pulp. One and a half horsepower is required to drive each Newton Falls unit. It was stated that: "the higher the consistency the less chances are to extract the objectionable materials from deinked pulp."

Newton Falls has a 35-ton system, i.e. each unit handles seven tons each. These seven-ton capacity units remove 55 pounds of reject materials. The Bird spokesman said that each unit probably has a capacity ranging between seven and thirteen tons but that Bird recommends ten units of this size for a 75-ton per day deinking mill. The pressure extractor has so far been built in one size only.

It was emphasized strongly that the Bird pressure extractor is not designed to replace other cleaning equipment in the mill. "It does not replace screens and other dirt removal equipment," Mr. Shaw said.

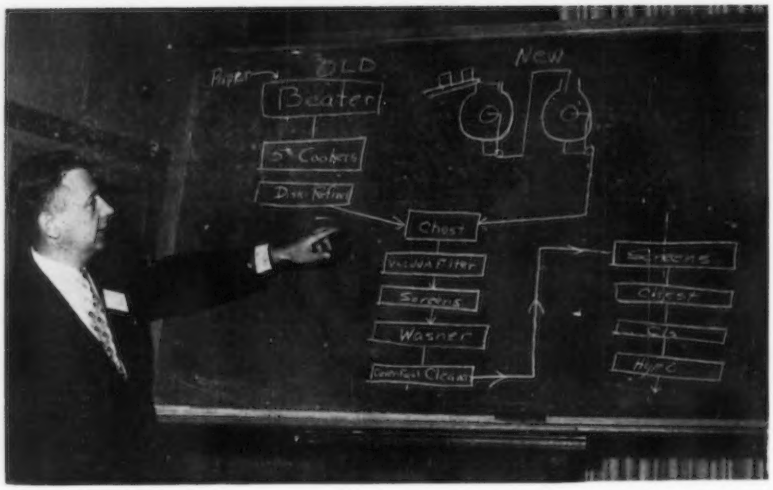
Economy and Conservation Through Deinking

John L. Clouse, Sr., posed the question: "Why Deink?" in the first technical session. H. Stovoroff, Buffalo Waste

Typical corridor conversation (L-R): A. T. Luey, Boxboard Research Assn.; R. H. Doughty, Fitchburg Paper, and Ralph Kumler, Waste Paper Council.

Candid Paper Trade Journal photo caught deinking Conference chairman E. F. Andrews making announcement.

Conference highlight, J. W. Morros of Newton Falls Paper Mills (left) and E. W. Shaw of Bird Machine Co. (right) discuss the new Bird Pressure Extractor.



F. E. Caskey, Morden Machine, created considerable interest when he discussed a continuous deinking system using Slushmakers.

Paper Co., discussed "The Waste Paper Market." J. J. Forsythe, International Paper Co., discussed "Yield Economics." The following are some of the highlights of this panel discussion, including factors which were brought out during the question and answer session immediately after the short papers were presented.

1—Deinked pulps may range between $20 and $60 per ton below cost of purchased pulp for some non-integrated paper mills, depending on such cost variables as cost and availability of raw materials, the cost of cooking and bleaching equipment.

2—Advantages of deinking pulp, as outlined by a number of spokesmen during this session, included the following: Deinked pulp is most valuable for its opacity properties. One speaker claimed that there is no virgin pulp on the market which has equal opacity value at a given strength value. Deinked stock does not require the usual stock preparation treatment. It is not necessary to jordan this pulp as much as virgin pulp although some jordan brushing is desirable. Deinked stock often acts as a levelling agent for other pulps because deinked stock furnish content and its general pulp characteristics do not appreciably vary over long periods of time. In a non-integrated mill deinked stock has particular advantages because through deinked stock the mill can more easily control its brightness and it is "therefore not at the mercy of the pulp manufacturers who frequently dictate brightness to the paper mill." In offset grades deinked stock has particular advantages because it causes easy bonding with fuzz-free surfaces. Offset grades containing deinked stock show less expansivity when exposed to various moisture conditions. This is also true for curl and one panelist stated that although there is no definite proof that offset grades containing deinked stock show less tendency to curl it is nevertheless a fact that sheets containing deinked stock made especially for calender grades (which have stringent no-curl requirements) have been known to take business away from sheets containing only virgin fiber.

3—One panelist expressed the feeling that the waste paper market should refer to waste paper as secondary pulp in order to abolish the stigma that exists to some extent when it comes to waste paper.

4—Price of waste paper is depressed at the moment. The decline of magazine stock is a trend. Most mills specify magazine stock by grades and this is caused because many of the deinking mills have experienced trouble with the ever increasing ground wood content of magazine grades. In a lighter moment one panelist quipped: "When mills specify magazines by grades they don't want Confidential Magazine which is apparently neither good to read nor to epulp."

5—Shrinkage or yield is one of the major considerations in deinking mills. The composition of the waste paper itself is of extreme importance in determining shrinkage or yield. Such varibles as filler, moisture and organics (the latter included in the coatings) all contribute in determining the final yield of deinking operations. The introduction of machine coated grades has greatly reduced the yield in deinking mills because all of the coating materials become lost in deinking. This is appreciable when one remembers that the coating of many machine coated grades may be as high as 35 per cent of total weight. Moisture content can be a direct loss to the deinker because he does not only purchases moisture as a result of buying waste paper on a weight basis but also because moisture can do considerable damage such as producing mold and bad odor in waste paper.

6—Latex type materials do not as a rule affect yield in deinking operations but they can cause tremendous spoilage. Two pounds of rubber can make 100 tons of deinked stock usable. The question of how to calculate percentage yield in deinking mills was again brought out. It was generally agreed that this is an extremely difficult question because of the reuse of paper mill white water in deinking operations. No definite rules, procedures or recommendations were made at the conference on this question.

7—In a brief discussion of slide washers, one panelist, in whose mill new slide-washers were installed recently, reported that this type of washer was somewhat of a disappointment. Losses increased as a result of installing the washers (conventional bed-plate washers had been used before) and it was also noticed that rosin size requirements increased in the paper mill after the washers were installed.

8—The subject of economically bleaching deinked stock which contains groundwood received considerable attention. One panelist reported that it has been found that it is not practical or economically feasible to bleach waste stock which contains more than 50 to 60 per cent of groundwood. Actual mill figures reported in this discussion included the following: Yield of waste paper containing no groundwood and 16.1 per cent ash was 66.3 per cent with 6.7 per cent loss on bleaching. This dropped to a 56.1 per cent yield and rose to 24.5 per cent loss on bleaching in waste paper containing 55 per cent groundwood. These figures were then compared with two typical soda pulps in which it was reported that stock containing 35 percent soda pulp and 8.9 per cent ash will give a yield of 75.5 per cent and 6.8 per cent loss on bleaching.

Afternoon Session

On Friday afternoon the second technical session took place. One of the highlights of this session was a presentation made by M. R. Kinne, Sealright-Oswego Falls Corp., discussing his mill's practices in deinking stock from its own converting plant. Fiber in this deinking waste stock principally southern virgin fiber. Deinking costs run between $11 and $14 per ton. Sealright-Oswego makes bleached liner furnish with its deinked stock. A sodium hypochlorite single stage bleach process is used. The bleaching takes place before washing, a practice which caused considerable interest among the deinkers assembled. pH ranges between 3 and

4.5 and paper machine white water is pumped into the pulper at 170° F.

Sealright-Oswego's waste contains vinyl coatings. The high temperatures used loosen this plastic material into strings which make it easy to remove during the washing operation. The entire deinking cycle requires two hours. Sodium hydrosulphite is used as an antichlor. Of most interest in this presentation was a statement made by Mr. Kinne that the mill uses a considerable amount of detergent to generate a lot of foam. This, Mr. Kinne said, aids in carrying away ink particles.

Sealright-Oswego processes 30 to 35 tons of deinked stock each day. The mill uses quarternary Bauer cleaners and sewers the fourth rejects. The system includes a Bird Vibrotor screen and yield is between 90 and 95 percent. The stock contains no groundwood and the average losses of 8 per cent of this system are mostly plastic materials. Brightness of the stock is increased by 10 to 15 per cent after bleaching. Mullen is increased considerably and it is the general opinion at this mill that the use of deinked stock permits the manufacture of better board grades.

F. E. Caskey, Morden Machine Co. then discussed a continuous deinking system which caused considerable interest as shown by questions asked by the audience during a discussion period which followed this panel. Mr. Caskey discussed the application of Morden's Slushmakers in continued deinking systems in which consistency regulation, caustic control and control instruments are included. He indicated that no refiners are required in a system of this nature and he demonstrated one typical system in which a fourteen per cent cost saving was realized. Mr. Caskey did not identify the mill in which this system was installed.

Another panelist, A. J. Felton, Shartle Division, Black-Clawson Co., discussed improvements made in Hydrapulper dumping during recent years.

Plant Tours

Participants in the second Deinking Conference visited the plants of Buffalo Waste Paper Co., Provincial Paper Co. and International Paper Co. These plant tours were staged on Thursday afternoon and on Friday morning.

Conference Luncheon

Two reports were presented during the official conference luncheon. A. M. Altieri reported on the committee's request for funds for a TAPPI research project on rubbery adhesives and R. W. Kumler on "Behaviour of Various Dyestuffs Toward Deinking Chemicals."

Mr. Altieri reported with regret that the TAPPI appropriations committee has not so far approved a request for funds to engage in research on what to do about nondispersable adhesives. These he termed a "very serious problem for deinking mills." He said that the requested project does not conform with the TAPPI appropriations policy but the subject has not been closed as far as the request for funds is concerned.

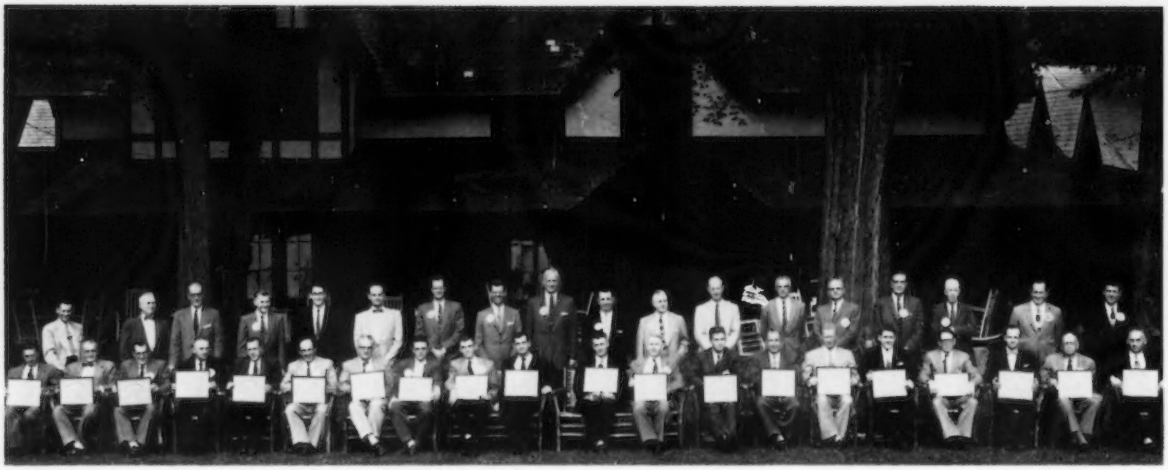
First Session Panel. (L-R): H. Stovoroff, Buffalo Waste Paper Co.; J. J. Forsythe, International Paper, R. W. Kumler, Waste Paper Utilization Council, panel moderator, and J. L. Clouse, Sr., Oxford Miami Paper.

Mr. Kumler gave a brief review of a waste paper utilization project in which the major dyestuffs manufacturers have been querried about their knowledge of behaviour of various dyestuffs toward deinking chemicals. Mr. Kumler reported that all of the dyestuff manufacturers have been quite cooperative in furnishing information and that a preliminary report has been drawn up.

Conference Banquet

Speaking about research in the paper and graphic arts industries J. Homer Winkler, technical advisor of Battelle Memorial Institute, Columbus, Ohio, outlined the most recent advances made in the graphic arts as a result of available research funds. The banquet speaker was quite outspoken in the matter of research funds. He said: "There is a woeful lack of fundamental research in the paper and printing industries." He continued: "There are areas of certain fundamental fields in which the curtain of knowledge must be parted more before we really know what we are doing, before we can use our machines better and before we can develop our markets better." The paper industry has a better record than the printing industry as far as making research funds available. This is partly true because in the printing industry the question always arises: "Who will pay for the research?"

Second Session Panel. Front Row (L-R): W. Logan, Provincial Paper; J. A. Dean, Hamilton Paper; Sven Fahlgren, Bird Machine, and D. M. Shapleigh, Bauer Bros. Back Row (L-R): R. H. Doughty, moderator, Fitchburg Paper; F. E. Caskey, Morden Machine; M. R. Kinne, Sealright-Oswego Falls, and A. J. Felton, Black-Clawson.



GRADUATES OF HUYCK FELT WORKSHOP NO. 3: Seated left to right, W. V. Robertson, Paul Schaferling, R. F. Dressler, John Maes, D. F. Pohlman, W. P. Manley, F. J. Gilmore, R. E. Hosmer, R. C. Mack, C. A. Reaves, Nick Cassoni, E. C. Hendrickson, R. H. Hart, B. Renshaw, C. C. Smith, Charles Springer, John C. W. Evans, Albert Blanchette, W. V. Johnson, G. V. Rood.

Standing left to right: Huyck personnel—W. S. Hodges, E. D. Rhodes, J. D. Skeer, G. N. Fitzgerald, J. P. LaRue, W. H. Houff, W. C. McClure; Fletcher Thornton, W. F. Green Co.; F. A. Soderberg, Huyck; Joe Baxter, Black-Clawson; A. S. Hayeslip, W. Moe, J. D. Chesney, D. B. Wicker, W. P. Stevens, C. V. Spencer, R. H. Beaumont, I. H. Peters. Other graduates not in photo were: Lawrence Ervin, J. L. Tennant, W. C. Thompson and Philip V. Bell.

Huyck Holds Third Workshop

We were privileged on September 17 to 19 to take part in the third Huyck Felt Workshop, together with 23 superintendents and other key personnel. These workshops are intensive three day courses covering all aspects of felt manufacture and use. Those attending the third workshop represented all areas of the continent, Canada, Pacific Coast, Deep South, Midwest, New England.

Program

The program of the three-day course was as follows: Wednesday morning—Detailed tour of the mill. Wednesday afternoon three lectures: "Felt Manufacture and Quality Control" by William S. Hodges, superintendent; "How Machine Requirements Determine Felt Construction" by John D. Skeer, technical assistant to the superintendent; "Synthetic Content Felts" by Dr. Dan B. Wicker, director of Physical Research and Development. Wednesday evening the students were Huyck's guests at the Saratoga race track (The editor was a poor picker).

Thursday's program included the following lectures: "Effect of Chemical Cleaners on Felts" by Harold S. Dahlberg, director of Chemical Product Development; "Field Service Engineering—Aid to Papermakers" by John P. LaRue, asst. manager of Field Service; "Chemical Felt Treatments" by Dr. William H. Houff, senior research chemist; "Huyck's Laboratory at Your Service" by Dr. Ralph H. Beaumont, Jr., director of Chemical Research; "Instrumentation—Future in Papermaking" by R. J. Demartini, vice-president, Waldorf Instrument Division and John Thompson, industrial marketing manager, Waldorf Instrument Division. Small group discussions of special interest filled the remainder of the afternoon.

On Friday morning there were two guest spekers who represented the two subjects most closely related to felts, i.e. paper machines and rubber rolls These were: Joe Baxter, Jr., director of research, Black-Clawson Co. and Fletcher Thornton, vice president, W. E. Greene Co. The lecture period was concluded with a talk, "Paper Machine Case Histories" by Irving H. Peters, manager of Field Service.

A Commencement Luncheon was held at the Albany Country Club where the graduates (everyone passed the course, including the editor) received framed diplomas printed on paper machine felt (the next thing to a sheep's skin).

Registration

W. V. Robertson, Buyer, Eastman Kodak Co., Kodak Park Works.

Fred J. Gilmore, Supt., Finishing Room, Puget Sound Pulp & Timber Co.

Carlton C. Smith, Supt. Doeskin Products, Rockland, Delaware.

Nick Cassoni, Asst. Supt., St. Regis Paper, Dederiet, N. Y.

Lawrence Ervin, Shift Foreman, West Virginia Co., Covington, Va.

W. C. Thompson, Machine Supervisor, West Virginia Co., Covington, Va.

William P. Manley, P. M. Supt., Hercules Powder Co., Hopewell, Va.

Richard C. Mack, Asst. Gen. Foreman, Paper Mills Division Eastman Kodak Co.

Paul Schaferling, Supt. Monroe Falls Paper Co., Monroe Falls, Ohio.

Albert Blanchette, Machine Foreman, Brown Co., Berlin, N. H.

R. F. Dressler, Asst. to Supt., John A. Manning, Green Island, N. Y.

Robert E. Hosmer, Supt. Strathmore, West Springfield, Mass.

W. V. Johnson, Purchasing Agent, Container Corp. of America, Chicago, Ill.

E. C. Hendrickson, Asst. Supt. of Paper Mills, Mead Corp.

John Maes, P. M. Supt., Port Huron Sulphite & Paper Co.

R. H. Hart, Paper Mill Engineer, Gulf States Paper Co., Tuscaloosa, Ala.

Gerald V. Rood, Paper Machine Supt., Byron Weston Co., Dalton, Mass.

Charles Springer, Asst. Supt., Hanover Mill, Whippany Paper Board.

Clyde A. Reaves, Operations Foreman, Gulf States, Tuscaloosa, Ala.

J. L. Tennant, West Virginia Pulp & Paper Co., Covington, Va.

Donald F. Pohlman, Ch. Proj. Eng., Scott Paper Co., Chester, Pa.

B. Renshaw, Supt. Mill Services, H. & D. Paper Co. of Canada, Ltd., Toronto.

John C. W. Evans, Editor, Paper Trade JOURNAL.

Philip V. Bell, Mill Supt., Acme Paper Products Co., Ltd., Toronto.

PROGRESS

*SCAPA Synthetic-Content Dryer Felts

are WAY OUT IN FRONT!

(Reports from leading American Paper Mills)

NEWSPRINT:
"Scapa Synthetic-Reinforced Cotton Dryer Felt, Type 1164-S, ran 107 DAYS, allowed increased machine speed and lower steam consumption, against average felt run of 60 DAYS on Cotton or Asbestos Felts."

WRAPPER:
"Scapa Synthetic-Reinforced Cotton Dryer Felt, Type 1164-S, ran 102 DAYS against average run of 55 DAYS on Cotton Felts."

OFFSET PAPERS:
"Scapa Synthetic-Reinforced Cotton Dryer Felt, Type 1164-S, ran 200 DAYS, against average run of 50-60 DAYS on Cotton Felts."

GLASSINE AND LIGHT WEIGHTS:
"Scapa Synthetic-Reinforced Cotton Dryer Felt, Type 1164-S, established a record of 155 DAYS run, as against an average of 80 DAYS on Cotton Felts."

KRAFT AND BOARD:
"Scapa Synthetic-Reinforced Cotton Dryer Felt, Type 1166-S, with Green Dacron Edges (U.S. Patent No. 2,612,190) ran 212 DAYS, against an average of 180 DAYS - using Asbestos Felts."

NEWSPRINT:
"Scapa Syntho-Asbestos Dryer Felt, Type 3480-C, still running perfectly after 122 DAYS, as against an average of 45 DAYS on Asbestos Felts."

BOND:
"Scapa Syntho-Asbestos Dryer Felt, Type 3175-C, ran 140 DAYS with perfect satisfaction, as against average runs of 60 DAYS on Asbestos Felts."

9-POINT BOARD:
"Scapa Syntho-Asbestos Dryer Felt, Type 3480-C, gave a record run of 142 DAYS, against average of 90 DAYS on Asbestos Felts."

Increasing Efficiency, Cutting Costs
and Stimulating PROGRESS wherever they are used!

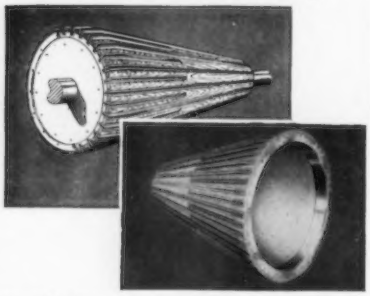
Morey Paper Mill Supply Co.
309 South Street, Fitchburg, Mass.

SOLE U.S. AGENTS FOR

SCAPA DRYERS, INC.
WAYCROSS, GA.

*U.S. Patents Pending

REVOLUTIONARY ADVANCE
In Jordan Plug Design



In addition to the strongest and most adaptable solid plug ever developed, Adapta-Plug is available in sleeve form for easy, economical conversion of old worn plugs.

E.D. Jones Adapta-Plug

Completely bandless, easily stripped and filled. Inverted-wedge-type slots hold bars firmly in place, eliminate hazards of slot wear and corrosion. Any desired edge available. Write for Bulletin EDJ-1094.

Complete ONE-PIECE assembly to fit shell of any Jordan

E.D. Jones FULBAR SHELL FILLINGS

Ideal filling for any Jordan, new or old, of any make. No keys or wedges needed. Easy to grind in. Many other advantages. Write for Bulletin EDJ-1094.

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts

Builders of Quality Stock Preparation Machinery

In Canada: The Alexander Fleck, Ltd., Ottawa

PRICES OF FIBERS

MARKET WOOD PULP

FOURTH QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$90.00/ —	§$90.00/ —	§$90.00/ —
Bleached Gw'd.	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/ —	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd.	150.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00 —
Sulphite Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.00
No. 1 Unblchd. Muslins	16.00/ 16.75
Blchd. & Unblchd. Underwears	15.00/ 15.50
No. 1 Light Silesias	7.00/ 7.50
No. 1 Light Blue Overalls	7.25/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.50/ 6.25
Cottonades	3.25/ 3.75
No. 1 Washables	2.50/ 2.75

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.25
Cotton Pants & Overalls	2.00/ 2.25
Twos and Blues, Repacked	1.50/ 1.75
No. 2 Roofing	.60/ .70

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended October 7

Grade		For 100 lbs.
1	n.a.	
2	1 cut—felting	$9.50/ $9.25
3	1 cut—felting	8.75/ 7.75
4	1 cut—felting	8.00/ 7.00
5	1 cut—felting	7.00/ 6.50
6	1 cut—felting	6.00/ 5.50
7	1 cut—felting	5.50/ 5.00

*Based on 73% cellulose.

Old Rope & Bagging

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$5.75/$6.50
Scrap Burlap	4.50/ 5.25
Australian Wool Pouches	5.25/ 5.75
Gunny	5.50/ 6.25
No. 1 Domestic Manila Rope	7.75/ 8.25
No. 1 Foreign Manila Rope	6.25/ 6.50
Domestic Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	October 7	October 7	October 7	October 7
No. 1 Mixed Paper	$4.00/ 6.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	13.00/ 15.00	14.00/ —	14.00/ —	11.00/ —
Overissue News (Lg. size)	16.00/ 18.00	12.00/ 14.00	19.00/ —	13.00/ —
Mill Wrappers	11.00/ 13.00	9.00/ 14.00	7.00/ —	13.00/ —
Old Corrugated Containers	24.00/ 25.00	21.00/ 25.00	27.00/ —	18.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 42.00	35.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	25.00/ 30.00	35.00/ 40.00	40.00/ —	30.00/ —
(Semi-chem. medium)	45.00/ 50.00	45.00/ 50.00	45.00/ 50.00	35.00/ 45.00
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	40.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	55.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	50.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	65.00/ —	45.00/ 50.00
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 30.00	16.00/ —	25.00/ 30.00
White Newsblanks	50.00/ 55.00	45.00/ 55.00	40.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	60.00/ —	— / —
Super Soft White Shvs.	65.00/ 70.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	100.00/110.00	90.00/ —	85.00/ 90.00
Hd. White Env. Cuts	115.00/125.00	120.00/125.00	100.00/ —	100.00/110.00
Col. Tab. Cards	50.00/ 60.00	60.00/ 65.00	47.50/ —	32.50/ —
Manila Tab. Cards	60.00/ 70.00	70.00/ 75.00	65.00/ —	65.00/ —
No. 1 Col. Ledger	30.00/ 32.00	30.00/ 35.00	40.00/ —	22.50/ —
White Ledger	45.00/ 50.00	50.00/ 55.00	52.50/ —	35.00/ —
Mixed Book & Mag.†	18.00/ 20.00	19.00/ 20.00	12.00/ —	— / —
No. 1 Books‡	25.00/ 27.00	22.00/ 24.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

How to cut plasticizer costs

(Replacing with Dow di- or triethylene glycol saves up to one half)

Di- and triethylene glycols have become well established as effective plasticizers for paper, cellophane, and cork. Their high boiling points, low volatilities, hygroscopicities, and wide range of compatibility account for their frequent use. And their acceptance continues to grow, for a reason that's important and profitable to you:

Di- and triethylene glycols can replace more costly plasticizers and save as much as 50% in price! The product being replaced, of course, determines the exact saving . . . and testing will tell which one of these glycols is best for you. Investigate today. Look anew at di- and triethylene glycols . . . and save!

Samples and specification data are yours by writing THE DOW CHEMICAL COMPANY, Midland, Mich., Dept. GD 804F-2.

YOU CAN DEPEND ON DOW

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Aug. 31	Sept. 7	Sept. 14	Sept. 21	Sept. 28
1957	89.2	71.1	90.9	90.2r	93.5
	Sept. 1	**Sept. 8**	**Sept. 15**	**Sept. 22**	**Sept. 29**
1956	97.0	76.8	98.8	100.7	101.0

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	93.9	96.5	96.6	93.3	93.6	92.5‡	74.9‡	90.5‡					
1956	99.6	102.6	102.9	102.5	101.8	99.9	85.6	96.7	94.3	99.5	97.6	90.9	97.9

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1950	1951	1952	1953	1954	1955	1956	1957
Year to Date	94.4	99.7	89.9	92.9	91.5	94.7	98.3	91.1
Year Average	95.8	98.0	88.6	92.3	91.6	94.9	97.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

	Aug. 31	Sept. 7	Sept. 14	Sept. 21	Sept. 28
1957	95	72	98	96	99
	Sept. 1	**Sept. 8**	**Sept. 15**	**Sept. 22**	**Sept. 29**
1956	95	71	97	94	95

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	91	94	94	92	93	91	72	94					
1956	100	100	99	100	99	98	77	95	89	96	93	84	94

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Sept. 28, 1957	LAST WEEK ENDING Sept. 21, 1957	CUMULATIVE TO DATE Jan. 1 to Sept. 28, 1957
% Activity	99%	96%	91%
	Tons	*Tons*	*Tons*
Total Production	300,659	296,404	10,468,236
Liner	106,651	98,833	3,592,188
Corrugating Material	45,040	46,128	1,593,493
Chip & Filler Board	5,592	5,674	204,859
Total Containerboard	157,283	150,635	5,390,540
Folding	56,965	53,594	1,934,490
Set-Up	12,999	12,431	427,679
Special Food Board	24,493	25,514	927,060
Other	48,919	25,514	1,788,467
Total Boxboard	143,376	145,769	5,077,696
Total Orders	*Tons*	*Tons*	
Received	295,363	259,955	
Unfilled End of Week	444,626	465,246	

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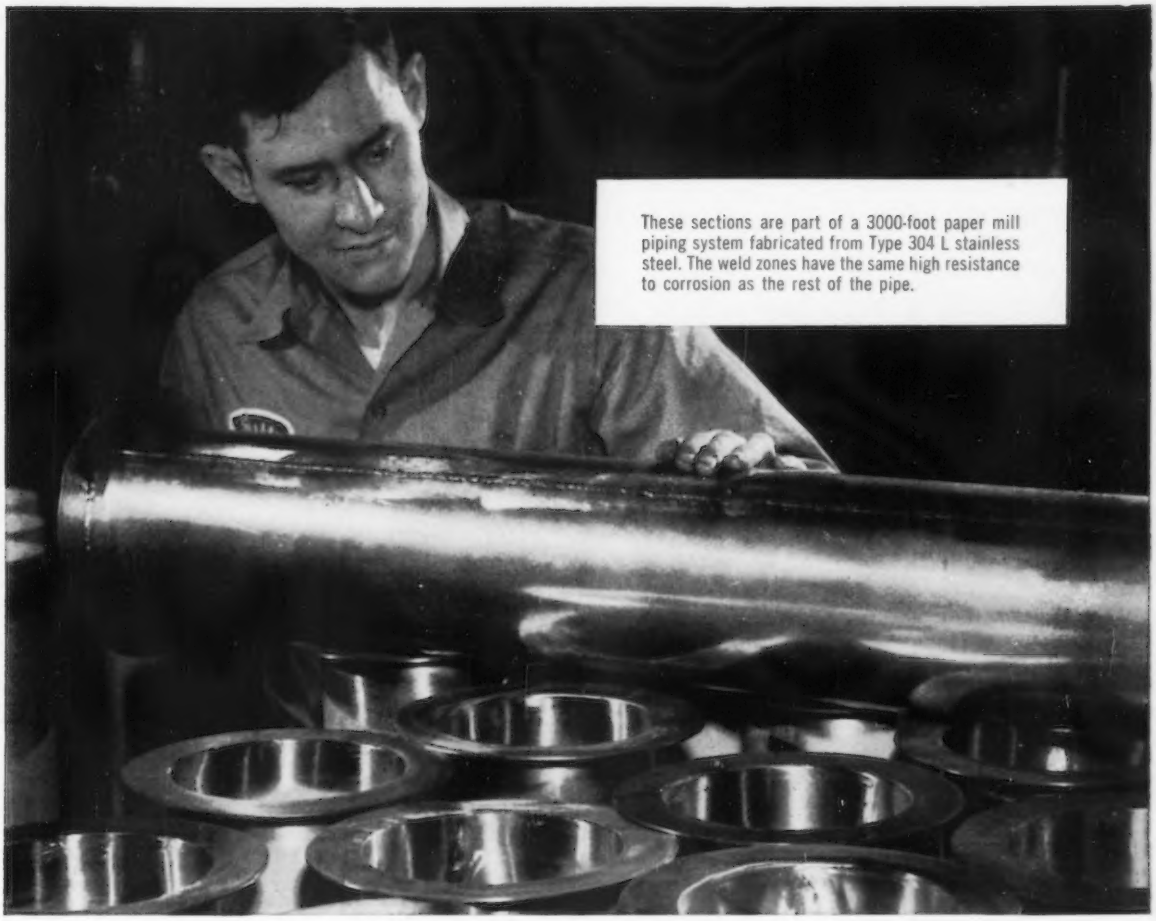
PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

PRICES OF MATERIALS

Aluminum sulphate:		
coml. bulk, c.l. wks.	cwt.	$1.85 / 2.05
iron-free, c.l. wks.	cwt.	3.55 / —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00 / —
Arg. ex. dock	cwt.	21.50 /23.00
New Zealand	cwt.	22.50 /25.00
Caustic soda:		
c.l. wks. solid, 76%	cwt.	4.30 / —
flak. & grd. drums, c.l.	cwt.	4.70 / —
liquid 50% tanks		2.90 / 3.00
liquid 73% tanks		3.00 / 3.10
China Clay		
dom., dry-grd., airfloat:		
325 mesh bgs., c.l. Geo.	ton	10.00 / —
300 mesh, bgs., c.l. Geo.	ton	13.50 /14.50
imp., white, lump, c.l. ex. dock		20.00 /35.00
Chlorine:		
single-unit tanks, works	cwt.	3.15 / —
multiple unit, 2-5 cars per yr.		5.25 / 4.05
Lime:		
hydrated, bulk, c.l. N.Y.	ton	23.63 / —
quicklime, bulk, c.l. N.Y.	ton	22.13 / —
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	7.45 / 7.55
Rosin size:		
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.44 / 7.48
Saltcake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
Soda ash:		
light, 58% ash bags, wks.	cwt.	1.90 / —
bulk, c.l. wks	cwt.	1.60 / —
Sodium chlorate:		
drums, c.l., wks.	cwt.	8.15 / —
drums, l.c.l., wks	cwt.	9.50 /10.50
Sodium peroxide:		
dms., c.l. E. of Miss.	lb.	.20½/ —
l.c.l. (same basis)		.21 / .21½
Sodium silicate, 40° Be.:		
tank-cars, wks.	cwt.	1.20 / —
drums, c.l. wks.	cwt.	1.55 / —
47° Be. WW.		
tank-cars, c.l. wks.	cwt.	1.90 / —
drums, c.l. wks.	cwt.	2.25 / —
Soybean, protein:		
chem. isol., wks. c.l. bags	lb.	.23 / —
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl	cwt.	6.49 / 6.75
white, dextrins	cwt.	8.08 / 8.20
chlorinated	cwt.	8.25 / 8.35
potato, Idaho, c.l. wks.	cwt.	6.50 / —
East, fr. all. 50 cents cwt.		
potato, Maine, f.o.b. wks.	cwt.	6.25 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	cwt.	2.00 / —
l.c.l. wks.	cwt.	2.45 / —
tank-cars, wks.	ton	18.60 / —
Sulphur:		
crude, c.l. mines, contract,	long ton	23.50 / —
f.o.b. vessels Gulf dock	ton	25.00 / —
Sulphur dioxide:		
liquid, coml. cyl., wks.	lb.	.10 / .12
multi-unit cars, wks.	lb.	.0535/ —
Talc, fibrous grd., bags:		
c.l. wks., N.Y.	ton	28.00 / —
l.c.l. wks., N.Y.	ton	31.00 /36.00
Titanium dioxide:		
anstase, c.l. dlvd. E. bags.	lb.	.25½/ —
l.c.l. dlvd.	lb.	.26½/ —
rutile, c.l. dlvd.	lb.	.27½/ —
l.c.l. dlvd.	lb.	.28½/ —



These sections are part of a 3000-foot paper mill piping system fabricated from Type 304 L stainless steel. The weld zones have the same high resistance to corrosion as the rest of the pipe.

Why Armco 18-8 ELC Stainless Steel Guards Against Corrosion in Weld Areas

Danger of harmful carbide precipitation alongside welds in stainless piping and other pulp and paper mill equipment is eliminated when you specify Armco 18-8 ELC Type 304 L Stainless Steel.

Carbide precipitation which occurs from welding certain chromium-nickel grades of stainless can seriously impair corrosion resistance at the weld area. It's the result of carbon "tying-up" or inactivating a portion of the chromium which leaves a zone near the weld open to attack by severely corrosive chemicals.

Because Armco 18-8 ELC *(extra-low carbon)* has a carbon content of not more than .03 per cent (compared to .08% max. for ordinary Type 304) there is less carbon to "tie-up" chromium. Thus, when this special Armco Stainless Steel is welded, harmful carbide precipitation is avoided.

For complete information on the grades of Armco ELC Stainless Steel, just write us at the address below. Our engineers will gladly consult with your equipment fabricator about the properties and uses of these special stainless steels.

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NEWS OF SUPPLIERS

Clifford R. Crawford

Frank T. Peterson

Karl F. Londegger

Black-Clawson Co. has appointed Frank T. Peterson president. Clifford R. Crawford, who has resigned as president, remains a member of the board and has been elected to the position of vice chairman of the board. Mr. Peterson, formerly executive vice-president of Black-Clawson, is also a director of the company.

Karl F. Londegger is chairman of the board with offices in New York City.

Mr. Crawford began his engineering and management career 48 years ago with the Shartle Brothers Machine Co. before it became a division of Black-Clawson. In 1918 he was named chief engineer and was appointed vice-president of Black-Clawson in 1939. From 1946 until he began his term as president in 1951, Mr. Crawford was general manager of the Shartle Division.

Mr. Peterson joined Black-Clawson in 1947 as sales engineer. He progressed rapidly to important management posts domestically and abroad, becoming executive vice-president in 1954. He will continue to make his office at the company headquarters in New York City.

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Sprout-Waldron, Muncy, Pa. announced that Ernest A. Alvord has joined their organization and will represent their Pulp and Paper Mill Division as well as handle industrial accounts on the Pacific coast.

Previously Mr. Alvord was chief engineer for Flintkote Co., manufacturers of insulation board, in Meridian, Miss. and previous to that he was a member of the U.S. Gypsum Co.'s staff in Clark, N. J.

Ernest Alvord

Herbert Wormwood

Knox Woolen Co. appointed Herbert A. Wormwood as felt sales engineer in New York State. He has over ten years experience in industrial sales and engineering with American Cyanimid Co. and Boston Chemical Products Co. He has been in training at Knox's Camden, Maine plant since November 1956.

Crawford & Russell, Inc., chemical and process plant engineers and constructors, have appointed John F. D'Antonio manager of their Board Processes Consulting Division. Crawford & Russell offer engineering and consulting services for the design and construction of plants to make gypsum board, hardboard, insulating board and particle board.

Mr. D'Antonio has worked on the design of board plants since 1927. He did much of the design and development work for the Oliver continuous board machine used in insulating board

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

"EXCELSIOR" FELTS

The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY

CAMDEN, MAINE

plants, and has designed many of the gypsum board, hardboard, insulating board and particle board plants in the United States and throughout the world.

A. J. Dickinson

J. U. Wolter

Freeport Sulphur Co. has named Alfred J. Dickinson vice president and sales manager succeeding the late Roy B. Johns.

Mr. Dickinson, until he accepted the position with Freeport, was vice president of Virginia-Carolina Chemical Corp.

Wyandotte Chemicals Corp. has named John U. Wolter resident sales representative for its Michigan Alkali Division.

Mr. Wolter has been assigned to the company's western district office in Chicago. He will be located in Kansas City, Mo. and his territory will include Missouri, Oklahoma, Kansas, Nebraska and Colorado.

Borden Co. Chemical Division has appointed S. Robert Sweet and John A. Bushee to its Coatings and Adhesive Department. Mr. Sweet, who formerly handled technical sales for Borden's in the Midwest, has been assigned to the department's sales staff. He will handle Placco-brand building materials in the Philadelphia area. Mr. Bushee, formerly with General Latex Chemical Corp., for which he developed various latex compounds, has been assigned to Borden's Latex laboratory in Peabody, Mass.

John C. Standish, left and Z. J. Chagnon, president and vice-president sales, respectively, of Albany Felt Co., just prior to their departure September 28 from New York on an extended business trip to obtain first hand information on felt applications and operation in European paper and paperboard mills.

OBITUARIES

Eugene B. Kardon, 41, president of the United Container Co., Philadelphia, died September 28, after a short illness.

Mr. Kardon also was vice president of the Blems Corp., vice president of the Philadelphia Container Co., secretary of the Kardon Box Co., president of the Leroy Paper and Stock Co., secretary of the E. J. Schoettle Co., and treasurer of the Morris and Sophie Kardon Foundation.

Percy A. Gilbert, 64, president of the Gilbert Paper Co., Waltham, Mass., died October 3 at his home.

Merritt C. Kaphingst, 56, superintendent of the sulphite division at the Columbus River Paper Mills, died September 30 at Vancouver Memorial Hospital.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION, REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946. (Title 39, United States Code, Section 233.)

Showing the ownership, management and circulation of PAPER TRADE JOURNAL, published weekly at East Stroudsburg, Pa., for October 1, 1957.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, George E. Lockwood, 15 West 47th St., New York 36, N. Y.; Editor, John C. W. Evans, 15 West 47th St., New York 36, N. Y.; Managing editor, R. E. Thuemmes, 15 West 47th St., New York 36, N. Y.; Business Manager, Arthur E. Gordon, 15 West 47th St., New York 36, N. Y.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Lockwood Trade Journal Co., Inc., 15 West 47th St., New York 36, N. Y.; Stockholders: George E. Lockwood, 15 West 47th St., New York 36, N. Y.; Katherine Von Jany, 15 West 47th St., New York 36, N. Y.; John J. Banninga, 15 West 47th St., New York 36, N. Y.; Marion C. Bogert, 15 West 47th St., New York 36, N. Y.; Edythe Z. Ellison, 15 West 47th St., New York 36, N. Y.; T. R. Lasser, 15 West 47th St., New York 36, N. Y.; A. J. Pearson, 15 West 47th St., New York 36, N. Y.; George E. Lockwood and Frederick E. Winkler, Trustees U.T.A.F.B.O.; George E. Lockwood, Jr., 15 West 47th St., New York 36, N. Y.; dated June 15, 1953; George E. Lockwood and Frederick E. Winkler, Trustees U.T.A.F.B.O.; Katherine R. Lockwood, 15 West 47th St., New York 36, N. Y.; dated June 15, 1953; George E. Lockwood and Frederick E. Winkler, Trustees U.T.A.F.B.O.; Barbara Louise Lockwood, 15 West 47th St., New York 36, N. Y., dated June 15, 1953; George E. Lockwood and Frederick E. Winkler, Trustees U.T.A.F.B.O., for the benefit of: Robert M. Lockwood, 15 West 47th St., New York 36, N. Y., dated June 15, 1953; George E. Lockwood and Frederick E. Winkler, Trustees U.T.A.F.B.O.; Frederick A. Lockwood, 15 West 47th St., New York 36, N. Y., dated June 15, 1953; George Saxe Macdonald Trust, Bankers Trust Co., 16 Wall St., New York 5, N. Y.; George E. Lockwood, 15 West 47th St., New York 36, N. Y., Lawrence Bell, 15 West 47th St., New York 36, N. Y., Trustees.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holders appears upon the books of the company as trustees or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting; also, the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.) 7021.

GEORGE E. LOCKWOOD,
(Signature of Publisher)

Sworn to and subscribed before me this 18th day of September, 1957.
(Seal)
IRVING CLAYMAN,
Notary Public, State of New York
No. 31-5716600. Qualified in New York County. Commission Expires March 30, 1958.

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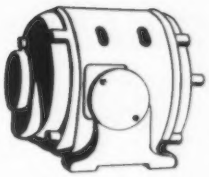
OAKITE No. 117

Brush it on...

Blow it off!



Here's how to clean up electric motors quickly, easily—and with safety to spare.

Apply Oakite Composition 117 with brush or spray...or immerse the entire motor in a bath of this safe, cold, solvent cleaner. Let stand about five minutes, then blow dry under air pressure. No rinsing, no wiping. Surfaces dry down clean and non-tacky, without a trace of oil, grease or smut.

Safe. Oakite 117 has a high flash-point and minimum toxicity. Only the normal precautions employed with all solvents need be observed.

Economical. Many solvent cleaners evaporate too soon, requiring re-application. Not so with Oakite 117...which means less solvent, less work, less time.

Try Oakite 117 on control panels, switches, and on any equipment where you can't use water. Some paper mills also report it's perfect for spot-cleaning of grease and soils on new felts. For more details, call your local Oakite Technical Service Representative, or write to Oakite Products, Inc., 68 Rector St., New York 6, N.Y.

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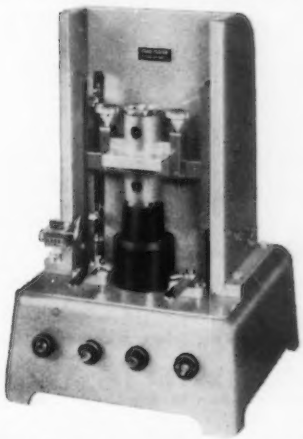

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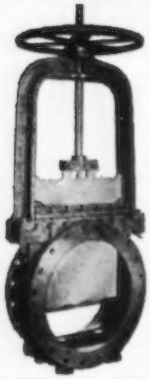

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- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
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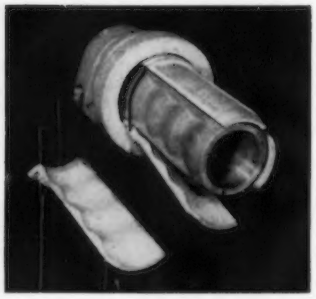

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Standard Sizes—3"—3½" and 4" core I.D. to fit 1⅛" thru 2⅜₁₆" round shafts and 1¼" square shafts. (High Tensile Aluminum)

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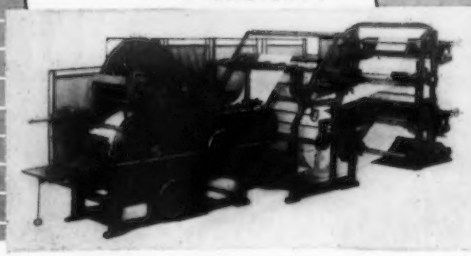

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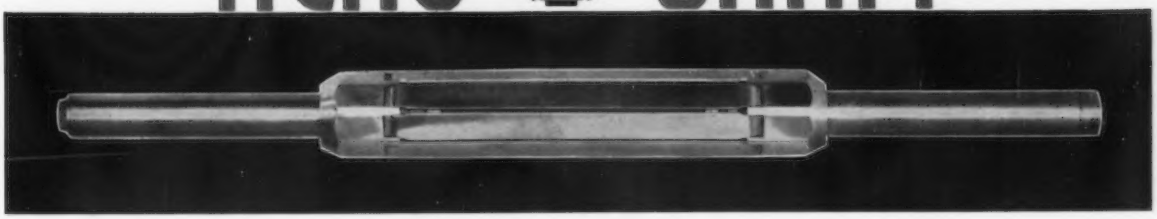

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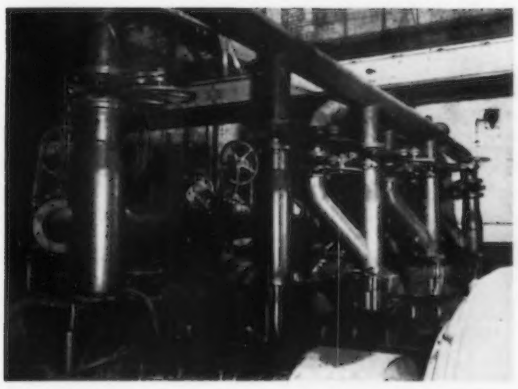

Consolidated Paper Company, Monroe, Michigan, simplified installation of this piping system, using Armco Pipe with made-to-order fittings.

Piping for steam, stock, waste, and water supply lines goes in quickly and economically with Armco Steel Pipe. Fittings are fabricated to order and supplied attached to straight runs of pipe. This saves installation time and ensures a perfect fit. Coatings for water supply lines are supplied to meet AWWA specifications with a spun enamel lining to prevent tuberculation.

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the world over . . .

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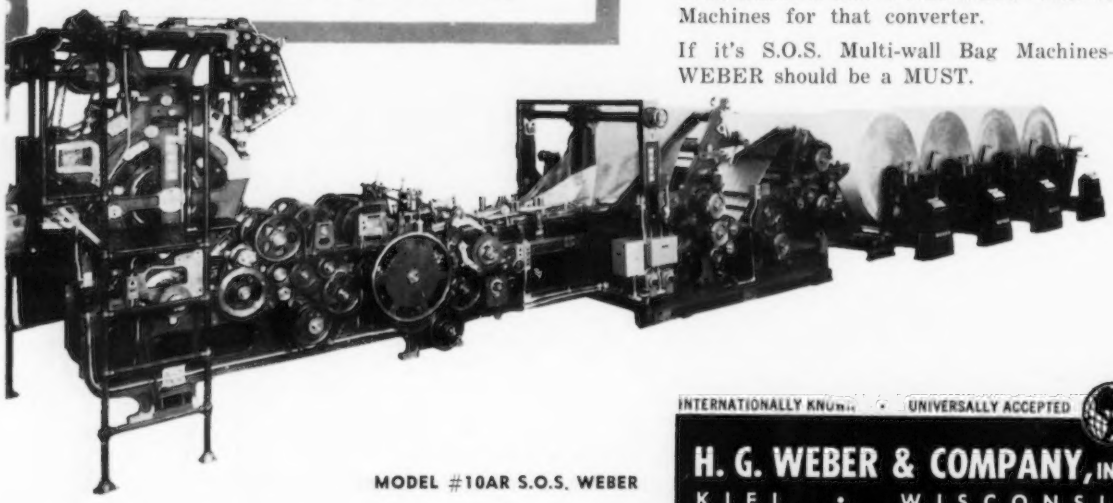
A recent shipment of another #10AR Machine makes it four WEBER SOS Multi-wall Machines for that converter.

If it's S.O.S. Multi-wall Bag Machines—WEBER should be a MUST.



MODEL #10AR S.O.S. WEBER

INTERNATIONALLY KNOWN • UNIVERSALLY ACCEPTED

H. G. WEBER & COMPANY, INC.

KIEL • WISCONSIN

BOARD MILL SCREENS

The design of Fitchburg NEW TYPE-DUPLEX SLOT Screen Plates is perfect for Board Mill Screens.

Easy screening, "open" slots, highest capacity and almost complete absence of damage, due to rigidity of our "DUPLEX SLOTS."

Plates stay cleaner — Less "strings" and slime — Less wash-ups.

FITCHBURG
Screen Plate Co., Inc.
301 South St., Fitchburg, Mass.

CUT PLANT MAINTENANCE!

Automatic
LUNKENHEIMER OILERS
eliminate costly hand labor!

Fig. 1834 Constant Level Oil Control

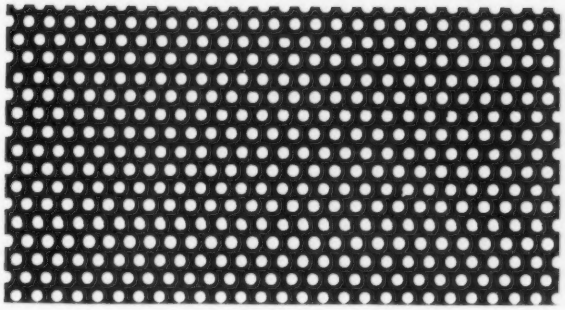
Fig. 1815 Globe Body Bottle Oiler

Labor costs are far too high to permit economical hand-oiling—yet valuable bearings must be protected against damage! Install Lunkenheimer Bottle Oilers, Oil Cups, or Constant Level Oil Controls to feed oil automatically—prevent over-supply, leakage, spatter. Request literature from your Lunkenheimer Distributor or write The Lunkenheimer Co., Box 360, Annex Station, Cincinnati 14, Ohio.

Fig. 1300 Sight Feed Oil Cup

L-257-30

LUNKENHEIMER®
THE ONE *Great* NAME IN VALVES



Perforated Plate is Going Places ... In the Paper Industry!

Paper and pulp mills depend on Hendrick Perforated Plate for tops in filtering and dewatering applications. Clean holes and precision spacing assure excellent draining . . . cut production losses due to blending. Hendrick Perforated Plate is furnished in commercially rolled metals and gauges to meet your specific requirements. For more details, write Hendrick today.

Hendrick MANUFACTURING COMPANY

77 DUNDAFF STREET, CARBONDALE, PA.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Wedge Wire • Architectural Grilles • Mitco Open Steel Flooring—Shur-Site Treads • Armogrids • Hydro Dehazers • Petrochemical Column Internals

---

. . . on USS Multigrip Floor Plate

USS Multigrip Floor Plate means *safe footing*, wherever it's used. Smooth, evenly-spaced risers give traction in any direction – even when the plates are wet. Because the risers are flat-topped, footing is comfortable, as well as safe.

Rolled from tough steel, Multigrip won't chip, crack, or splinter. And it will give years of service and protection. It's available in large plates, eliminating installation waste.

These are just a few of the reasons why it pays to specify Multigrip Steel Floor Plate for stairs, aisles, ramps, platforms, floor areas, or any other place where safe footing is imperative.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, CHICAGO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

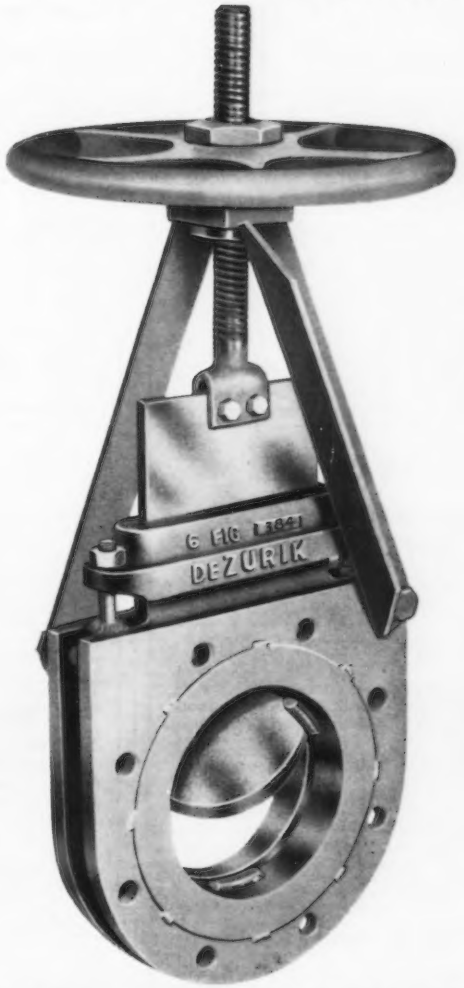
USS multigrip FLOOR PLATE

Sold by leading distributors from coast to coast

USS

UNITED STATES STEEL

NOW... NEW... from DeZurik



a FABRICATED BONNETLESS Knife Gate Valve

with more worthwhile features than you've ever had in any gate valve. Get the full story on this low cost, low maintenance valve—now—new—from DeZurik. Write to:

DeZURIK CORPORATION
SARTELL, MINNESOTA.

PAPER TRADE JOURNAL / CLEARING HOUSE

Help Wanted

A leading chemical manufacturer has an opening in his paper laboratory for a paper school graduate, or chemist with ChE or BS degree with paper mill experience. The position involves application of new and existing products to manufacture of paper and paperboard. Experience in coatings helpful, but not essential. Opportunity given to assist in supervision of laboratory located in Midwest. Send resume of education and experience, along with salary expected to: Director of Paper Laboratory, Post Office Box 5670, Chicago 80, Illinois. All replies kept confidential. O-14

"TOUR BOSS WANTED"

IF YOU ARE A TOUR BOSS OR AN EXPERIENCED MACHINE TENDER WITH ABILITY AND AMBITION TO BE A TOUR BOSS WE HAVE AN OPENING. PROGRESSIVE TWO MACHINE BOARD MILL IN EASTERN PENNSYLVANIA. MANUFACTURING SET-UP AND FOLDING BOX BOARDS AND SPECIALTIES. STEADY EMPLOYMENT. IF AVAILABLE, WRITE BOX 57-276 PAPER TRADE JOURNAL, GIVING EXPERIENCE AND AGE. O-14

WANTED
BOARD MILL SUPERINTENDENT
for an
EASTERN SEABOARD MILL

One Machine, Narrow Trim, Steady Runs, Lined Boards. State age, experience, and previous record of employment.

Reply Box 57-282 care Paper Trade Journal.

O-28

CONVERTING SUPT. — For Tissue and Towel Converting operations. Must have mechanical and managerial qualifications, also ability to work on new product development. Apply to Box 57-281 care Paper Trade Journal. O-28

Help Wanted

PAPER MEN

$5,000 to $50,000

SALES—PRODUCTION—TECHNICAL

Top mills, converters, and jobbers from Coast to Coast badly need qualified men at every level. Choice spots open in pulp, board, coarse, fine, folding, corrugated multi-wall bags, transparent packaging and paper specialties of all kinds.

I am a paper man myself. If your record of performance entitles you to increased responsibility and greater potential, I can and will help you to attain it. You may contact us in absolute confidence.

GEO. M. SUNDAY & ASSOC.

Personnel Consultants to the Paper Industry
6 E. Monroe, Chicago AN 3-1970 TF

ENGINEERS

Large completely integrated Kraft Paper Mill in Florida seeking graduate:

Mechanical Engineer with minimum of 5 yrs. experience; Project Chemical Engineer with 3 to 5 yrs. experience for Mill Operating Problems; Chemical Engineer—Research and Development; Chemists—No prior experience necessary.

Please submit detailed resume of experience, education, and salary requirements, and personal data. Replies will be held in strict confidence to Box 57-277 care Paper Trade Journal. O-14

HELP WANTED

Retired pulp and paper mill supervisory personnel in major producing areas (Lake States, South East, South West, North East, etc.) for interesting part time work. No selling, demonstrating or servicing involved. Apply to Box 57-250 care Paper Trade Journal.

TF

MACHINE TENDERS
BACK HANDS

FOR NEW ONE HUNDRED TON PULP AND PAPER MILL NOW NEARLY COMPLETED IN CENTRAL AMERICA—NEW SPECIAL 158 INCH RICE-BARTON FOURDRINIER PAPER MACHINE—EXCELLENT OPPORTUNITIES—TOP SALARIES—U. S. TAX EXEMPT—PLEASANT HEALTHY LIVING CONDITIONS—NEAR BEAUTIFUL LARGE BEACH RESORT AND AMERICAN COLONY—PLEASE SUBMIT RECORD OF TRAINING AND EXPERIENCE—ALSO PLEASE BE SURE TO STATE SALARY DESIRED AND INCLUDE TELEPHONE NUMBER IN FIRST REPLY—ALL REPLIES HELD IN STRICT CONFIDENCE.

ADDRESS BOX 57-253 CARE PAPER TRADE JOURNAL. O-21

FOR SALE

PRINTING PRESSES

2—32" Kidder, 4 color Flexographic presses
1—Koenig-Bauer 5 color Rotogravure press. Reliance drive.
1—24" 4-Color Kidder Celloprinter
1—50" Miller Single Color #W102 Gravure press
1—42"—4 color Cottrell-Heinrich Flexo, press on 6-color frame, suitable for cellophane
1—48" 6-color Heinrich-Cottrell Press. 4-Flexo—2 Rotogravure.
1—31" two color Wolverine Flexo-Printer
1—2-Color #4 Keese Perfect Seal press
1—25" Aniline press, 4 color on 8 color frame
Tail Printers: 35½" & 29" wide 3 color, 21" & 25" wide 2 color
1—2 color 9" wide Schmutz Kraft Paper Tape Printer, with adjustable cyls.

POWER PAPER CUTTERS

Seybolds: 56" & 64" Precision; 50", 56" & 65"—10Z; 84" Dayton; 60"-20th Century; 65" Holyoke. Sheridan: 36" new model, Oswego: 44", 38", & 34", 54" heavy duty.

CAMACHINES

1—92" Model 18
1—82" Model 10-10A
1—72" Type 10-11
1—72" Type 10-10
1—62" 26-2A
1—50" 26-3A with C.T. & Elec. Eye
1—42" and 1—62" Type 6
1—42" Type 9-5-A Roller Bearing 1500 fpm.
1—42" Type 10-5A, 30" rewind 1500 fpm.
1—42" Type 24-2A

OTHER SLITTERS

1—90" Kidder Superspeed 40" Rewind
1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
2—24", 1—30" & 1—36" Kidder S.L. Shear cut

MISCELLANEOUS MACHINES

1—37" & 1—60" Hot Melt Coater & laminator
1—24" Waldron Reverse Coater
Schultz Automatic Roll machines, 12", 18" & 24" wide.
1—Knowlton & 1—Langston Tube Winder with Recutter
1—36" Beck Model CSH with General Electric eye
1—36" Beck Model CSH Sheeter with Automatic Piler
1—36" Beck Sheeter Model CCSH, suitable for cello.
1—Hudson Sharp 2 Web Napkin machine, embossing attach., 13½" to 18" napkins
2—Hudson Sharp Single Fold Interfolding Towel machines
1—40" and 1—50" wide
2—81" Dietz Standard Toilet Paper Converters
Die Presses: 1—50" x 22" Type UA, 2—17" x 42" Seybolds
1—48" Moore & White Sheeter with backstands & layboy
2—40½" Hudson Sharp Interfolding Tissue machines
1—Manhasset Bag machine with electric eye, range 4" to 12" wide, 6" to 19½" long, with 2-color flexo. printer
4—Roto PO-2 Poly-bag machs.
1—Roto Model C Cellophane Bag machine
1—Matador Bag machine. Length 3½" — 10½", Width 1⅜"—6".
4—Simplex #7 Poly-bag machs.
1—Holweig F&S Bag machine. Range: 2½" to 11" wide, 6" to 19" long
1—Strachan & Henshaw Bag machine Model 200V with 2-color tailprinter.
1—72" & 1—84" Potdevin squeeze roll waxing mach.
1—46" Perkins, heavy duty, high speed Embosser
1—18" Hudson Sharp Embosser
2—Waldron Embossers, 1—46", 1—60" heavy duty.
1—48" Hudson Sharp Embosser-tinter.
1—30" Peter's Cellophane sheeter
4—Hamblet Sheeters, 42", 54", 84" & 100"
1—60 Black-Clawson 3 ply board or paper laminator

GIBBS-BROWER CO., INC.
10 Depot Plaza, White Plains, New York
Telephone—Rockwell 1-1130

Mid-West Branch:
400 Washington Building
Madison 3, Wisconsin

West Coast Branch:
5270 East Washington Blvd.
Los Angeles 22, Calif.

O-14

Entire Contents Thomas Phillips Company Paper Mill At Akron, Ohio

FOR SALE BY OWNER

Write or phone for complete prices. All equipment at plant as is where is and subject to prior sale

SCREENS

#3A Bird, Copper Vat
#2A Bird, Copper Vat
Smythe 4-plate flat, with shaker

VATS

3—Downingtown Vats, C.I. Ends, cypress sides
3—42″ x 86″ cylinder moulds, a.f. bearings
3—16″ Rubber couches
3—Sandusky Showers
1—Felt whipper and Sandusky shower
1—Suction box
1—Sandusky Suction Press

PRESSES

First and Second
2—Top, brass 15″ x 84″
2—Bottom, rubber 15″ x 84″
Horne Smooth press, pneu. controls (new 1956)

DRYERS

21—36″ x 82″ Downingtown, fr. bearings
1—Sandy Hill Breaker Stack w/in.-drive, pneu. controls (new 1957)
1—Stickle Tension Roll steam control system & controls (new 1957)
23—Stickle micro-orifice visible drains (new 1957)
1—Stickle Vacuum Pump (new 1957)

CALENDERS

1—5 roll Downingtown 84″ face
1—7 roll (originally 8) 84″ face
1—Set embossing rolls 9 lines to inch

REEL

1—2 drum upright

WINDER-SLITTER

1—Moore and White w/new (1956) electric drive

DRIVES

Mortise bevel gear corners
#7 ¾ Reeves w/75 HP motor

PIPING

Stainless steel recirculating system

PUMPS

1—Nash H7 vacuum 50 HP
1—Nash Hytor vacuum 10 HP
2—Shartle 8″ x 6″
3—Shartle 12″ x 10″ white water suction 20 HP
2—Harmain centr. 6″ x 6″ 800 gpm 40′ Hd.

STOCK CLEANING

2—Primary Bird Dirtecs (new 1957)
2—Sec. Bird Dirtecs (New 1957)
2—Nichols Vortraps

BEATERS

4—Downingtown Iron Tub 1200 lb., cement bottom, washers
1—Dilts 1000 lb.
1—Midwest 1600 lb., wedge type roll
1—Midwest 2500 lb., wedge type roll
1—Rotary Filter Screen
1—Rubber covered steel tank with PVC bleaching system, 1″

ROPE COOKERS

1—7000 lb. cap.
1—8000 lb. cap.

HOIST

1—Yale Electric and monorail system

BALER

Economy upstroke Style 172F5 (new 1956)
1—Miami No. 1 w/af bearings 150 HP motor and reducer
1—Miami No. 1 w/f bearings 150 HP motor and reducer
1—Clarkson chemical feeder

SAVE-ALL

1—Bird with couch and shower

MISC.

1—Cameron Rewinder 10-5A, 54″, 36″ dia. roll
1—Air compressor, 15 HP DeVilbiss
25—Broke boxes each with 4 b.b. casters
1—Bird Consistency Regulator, Stnls, w/ controls, cap. 2000# hr. (new 1956)
1—2000# Dial springless floor scale
1—Budget 1 ton elect. hoist
2—Hand roll trucks
2—4 wheel trucks
1—Rope Duster 15 HP
1—Budgit 2 ton chain block
1—Horizontal caustic soda tank 6′ x 8′ steel
1—Battery Lewis Shepard Jackstacker 1500# cap. w/generator
1—Weld-built Elevator 1000# cap. 10′ lift
1—Lewis Shepard 2000# hyd. pallet truck
1—Yale and Towne power winch

LABORATORY

1—Schopper tensile tester w/strip cutter (new 1956)
1—Perkins Mullen Tester
1—Elmendorf Tear Tester
2—Thwing-Albert Basis Wgt scales
2—Gurley densometers (new 1957)
1—Automatic micrometer (new 1957)
1—Macbeth Ph meter
1—Hart moisture meter
1—24″ paper cutter
1—Pelouze postal scale (5 lb. cap.)
1—Absorption tester
1—Brightness Tester, Photovolt
1—Freeness Tester, Canadian Standard

PUMPS, STOCK, HIGH CONSISTENCY

1—Shartle Duplex Plunger
1—Shartle Single Plunger
1—Shartle, Centrif. 2800 gpm at 20′ hd.

PUMPS, WATER

1—Allis-Chalmers high pressure 2 stage 25 hp 150 gpm 3350 rpm
1—Louis Allis, 15 hp 100 gpm 3500 rpm
1—2″ Single stage centrif. 5 hp
Also several low head high volume pumps
1 ea. Boiler feed pumps, steam and electric

MACHINE SHOP

1—Craftsman Double End Grinder, floor pedestal type, 1/3 HP motor 115 V., 3450 RPM
1—Craftsman 6″ Jointer, 1 HP motor, 115 V., 3450 RPM
1—Dunlap Utility Hack Saw, ½ HP 110 V., motor, 1725 RPM
1—Pamco Arbor Press #2
1—Craftsman Quick Change Gear Lathe, 52″ bed, 1/3 HP, 115 V., 60 cycle, 1750 RPM motor
1—Atlas Bench Shaper with vise, ½ Hp, 110/220 V. 1 phase, 60 cycle, 1750 RPM motor
1—Jig Saw, floor pedestal type, 110 V. A.D. Motor
1—Prentice Bros. 18″ Drill Press, 2 HP Link-weld motor 440 volt, 3 phase, 60 cycle, 720 RPM
1—Linewelder DC, 250, Electric Welding, 220 Volt, 3 phase 60 cycle, 3600 RPM motor
1—Alamite Volume Pump, model 6536
2—Acetylene Welding sets and fittings
3—Large Shop Vises
2—Large Anvils
2—Iron Hinged Pipe Vises, 1 large, 1 small
1—Tri-stand Pipe Vise
1—6″ Swivel Vise
1—21″ Drill Press with Vise, 2 HP 220/440 V. 60 cycle motor
1—Williams Pipe Cutter and Fittings. Dies 3″ to 8″, V-belt drive, 2 HP 440 V., 3 ph., 60 cycle, 1130 RPM motor
1—Atlas Rip Saw. pp. 8″ dia. blade with side extensions, 1 HP 220/440 V., 60 cycle, 3450 RPM motor
1—Cincinnati Grinder, double end, floor pedestal type 1 HP 440 volt, 3 phase, 60 cycle, 1750 RPM motor

BOILER

Babcock & Wilcox 440 hp Sterling Type H (installed 1947) 250 lb.
United Ash Blower
Combustion Engineering Stoker, Steam

COATING ROOM

1—Waldron Brush Grounder Machine 37″ max. width
1—Cameron Winder Machine 46″ w/back-stand
1—Waldron Polishing Drum w/brushes, 40″
1—B. F. Sturtevant Co. Steam Dryer with G.E. 30 HP 440 volt, 860 RPM motor
1—Exhaust fan with 3 HP Crocker-Wheeler 440 volt, 60 cycle 1750 RPM motor
1—Budgit 1 ton Electric Hoist
1—Yale ½ ton spur-geared Chain Block
1—Lewis-Shepard 4000# Jack Lift Truck, "Master Line," No. 117292, HPI-40
3—Coating Mixing Tanks
1—Cooking Tank, steam jacketed
2—Sets embossing rolls 40″, steel & paper, 13 lines to inch and 21 lines to inch

The Thomas Phillips Company

23 W. Exchange Street — **Akron 8, Ohio** — **Phone FR 6-2181**

O-21

FOR SALE

CONTENTS OF NIAGARA FALLS, N. Y. MILL OF CERTAIN-TEED PRODUCTS CORP.

6—Dilts 1500# Iron Tub Beaters
2—N&W Mamouth Jr. and Monarck Jordans
2—Impco 12 Plate Flat Screens with Dunbar drives and S.S. Braemer Controls
4—Triplex Stock Pumps
1—47" Carthage 4 knife Chipper

100" SINGLE CYLINDER MACHINE

WET END SECTION

1—Single cylinder wet end consisting of a Downingtown Iron End Vat, Cylinder 48" dia. x 99½" face, Rubber Covered Couch Roll 18" dia. x 104" face. Both the Cylinder and Couch are anti-friction bearing equipped. There is also a felt guide, Broughton Shower and a spare cylinder and spare couch roll.

SUCTION FELT ROLL

1—Sandusky Suction Press Roll 14 9/16" dia. x 104" drilled face.

PRESS SECTIONS

2—Complete press sections. Each section has a top press roll 18" dia. x 98½" face Stainless Steel Metalized and the bottom rolls are 18" dia. x 98½" face Rubber Covered. These sections are complete with Lodding Doctors, felt carrying rolls and each is driven by a Falk totally enclosed right angle drive rated at 6 HP, 6.236-1 Ratio. Also included are four spare press rolls.

DRYER SECTION

1—24" dia. x 94½" face lead dryer
41—48" dia. x 94" face dryers
This section is complete with two deck frames, gears, bearings, steam joints and 14 Lodding Doctors. These dryers were all in operation at 54# steam pressure.

CALENDER STACK

1—94" face Six Roll Stack of the Open Way Type. The bottom roll is 16" dia., two rolls are 12" dia. and three rolls are 7" dia.

REEL

1—Downingtown Two Bowl Reel which will accommodate 60" dia. rolls.

SLITTER AND REWINDER

1—Warren Two Drum Slitter and Rewinder which will rewind to 60" dia. This machine is equipped with six sets of shear cut slitters and is complete with D.C. variable speed motor drive.

DRIVE

1—Louis Allis Dynomatic Corp. 75 HP Variable Motor Drive 440/3/25 with adjustable Speed Motor Clutch 1400 rpm-200 rpm.
Complete line shafting with pulleys, pillow blocks, hangars, etc., along with all Right Angle Marshall Drives for the entire machine are available.

ALL OF THE ABOVE OFFERED INDIVIDUALLY

ROSS PAPER MACHINERY CO.
265 PASSAIC ST.
NEWARK 4, N. J. HU 2-2177
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Help Wanted

MAINTENANCE FOREMAN

We are looking for a man with practical paper mill experience to fill this new position in our Maintenance Department. Must also be capable of supervising work of other maintenance crafts. Previous supervisory experience desirable but not absolutely necessary. Submit complete information to —

Personnel Department
RIEGEL PAPER CORPORATION
Acme, N. C. N-4

WANTED
EXPERIENCED PAPER MILL INSTRUMENT MECHANIC

We are engaged in a long range program to develop a radically improved paper machine. If your experience with pneumatic and electronic instrumentation in a modern news or kraft mill qualifies you, we need your help to install and maintain instrumentation and automatic controls in our experimental paper mill. You will also help with the pulping system, model testing, and alterations. This is a challenging opportunity for a top notch mechanic. We offer a 35-hour week, excellent salary and benefits. Please send detailed resume to:

Paper Group
Springdale Laboratories
835 Hope Street, Springdale, Connelticut O-28

MECHANICAL ENGINEER

Nationally known Paperboard and Folding Carton firm has opening for graduate mechanical engineer. Major responsibility will be supervision of small engineering staff under direction of plant Engineer on projects including estimating, design, selection and installation of machinery, equipment and process piping as well as building repairs and alterations.

Experience in Paperboard Industry desirable. Location convenient to northern New Jersey. Benefits include hospitalization, group insurance, retirement, etc.

Salary commensurate with experience and ability. Reply stating age and present salary to Box 57-285, care of Paper Trade Journal.
O-21

We are proud to be known by the customers we serve...
May We Serve You?

ROSS PAPER MACHINERY CO.
265 Passaic Street, Newark 4, N. J.
Quality Used Paper Machinery Since 1919

BARGAINS

IMMEDIATE DELIVERY

1—145" Holyoke—9 roll Super Calender Stack.
1—66" Holyoke—9 roll Super Calender Stack.
1—80" Pusey & Jones—11 roll Calender Stack.
1—30" x 160" Farrel-Birmingham Roll Grinder. Factory rebuilt in 1954 at a cost of $18,500.00. New drives and latest type of equipment.
27—48" x 110" Bagley & Sewall Dryers.
21—48" x 82" Pusey & Jones Dryers.
6—48" x 88" Bagley & Sewall After Dryers.
1—120" Pusey & Jones 2-Drum Winder. Antl Friction Bearings.
1—110" Pusey & Jones 2-Drum Winder. Antl Friction Bearings.
7—14 Plate Impco Flat Screens, Bronze Vats, latest type, direct motor drives, S.S. Plates.
1—Waxing Machine, complete with Vilter Refrigeration Equipment and Drives.
1—Hamblet Roller Bearing Cutter—30 roll backstand. Serial No. 2282, Model 28, Fully Equipped.
1—Hamblet Layboy, Serial No. 1140, Fully Equipped.
1—Continuous Feed Metal Edging Machine. (New)
1—Brightwood Box Machine, 6" Model Automatic Rotary Feed, End Shredder (60 per minute), Complete.
1—Hudson Sharpe Wax Paper Converter, Serial No. 1507, Fully Equipped, trim 72".
1—84" Kamyr Machine Complete, 75 Ton per day.
1—25" Dia. x 156" Suction Couch Roll.
2—22" Dia. x 156" Rubber Covered Press Rolls.
2—84" Bagley & Sewall Wet Machines.
1—No. 2 Jones Pulper, Antl Friction Bearings. Spare Worm.
1—Cowls Hydrasiusher Model 10 SD.
1—90 H.P. Terry Turbine. Type G-4000/1000 RPM. For Paper Machine Drive. Complete.
1—74" x 32" Saveall, complete with rubber suction couch.
1—8' x 10' Oliver Vacuum Filter.
2—Impco Pulp Screens.
2—No. 3 Impco Knotter Screens—S.S. Plates.
3—100 KVA Wagner Transformers, 4600-460.
1—24" x 6' Lodge & Shipley Geared Head, Heavy Duty Machine Lathe, Taper Attachment, Hollow Spindle, Motorized.
1—16" Steptoe Shaper—Motorized.
1—B & S No. 2 Surface Grinder—Motorized. Gear Reducers, P.I.V. Drives, Gearmoters, B.B. Pumps, Etc. 1000 Electric Motors from ¼ H.P. to 600 H.P. In Stock.

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.
We also have a large inventory of new and used flanged fittings at all types at very low prices.

Write—Wire—Phone For Your Needs

RUDERMAN MACHINERY EXCHANGE
GOUVERNEUR, NEW YORK
Telephone 333-334
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ROSS PAPER MACHINERY CO.

USED PAPER MAKING AND CONVERTING MACHINERY

265 PASSAIC STREET • NEWARK 4, NEW JERSEY • Humboldt 2-2177

Cable Address: "JACKROSS Newark, Nlar"

QUALITY GUARANTEED MACHINERY ERECTED FOR YOUR INSPECTION

"AQUABRUSHER"
1—Apmew Aquabrusher. Steel vat 15' dia. x 10' deep, with 75 H.P. motor and controls.

BEATERS
1—E. D. Jones "Bertram" 1500 lb. roll 72" x 63", C.I. tub, complete with Foxboro air cylinder control and washer.
1—Valley Iron Wks. 750 lbs. Iron Tub.

CALENDER STACKS
1—Sandy Hill 84" 7 roll with doctors.
1—Lobdell 82"—5 roll.
1—Lobdell 86" five roll.
2—Lobdell 86"—7 roll.
1—Farrel 152"—frames for 11 rolls with 5 rolls.
1—Downingtown 128" 7 roll, complete.
1—B & C 124" 5 roll.
1—B & C 124" 7 roll.
1—B & C 72" 7 roll.

CONVERTING & PRINTING MACHINERY
1—Hobbs 24" x 38" die press.
1—Seybold Duplex 7" x 36" die press.
1—National model AS Auto. metal edger
1—Kidder 40" 3 color Oil Ink Press.
1—Kidder 48" 3 color Oil Ink Press.
1—ABC Case Sealer—adjustable.
1—Brightwood Box Machine.
1—Knowlton Core Cutter.
1—Hudson-Sharp model GL-2 2-ply laminator.

CYLINDER MOLDS
1—92" face x 30" dia.
1—102" face x 36" dia.
1—136" face x 54" dia. stainless steel covering.
2—74" face x 36" dia.
2—73" face x 48" dia.
1—72" face x 48" diameter.
2—104" face x 36" diameter.

DRIVES
46—Inclosed RT. Angle and parallel. Reeves, P.I.V., etc. 2 H.P.—150 H.P.

DRYERS—HYDROSTATICALLY TESTED
2—42" face x 36" dia.
2—44" face x 36" dia.
2—46" face x 16" dia. & accessories.
2—46" face x 36" dia.
40—46" face x 24" dia. chrome plated
58—46" face x 48" dia. chrome plated
1—67" face x 36" dia.
1—68" face x 36" diameter.
2—70" face x 36" dia. with gears.
8—72" face x 36" dia. with AF bearings.
1—74" face x 36" dia. Lukenweld—A.F. Brgs.
3—76" face x 36" dia. with gears.
10—80" face x 48" dia., with gears & bearings.
1—82" face x 48" dia., gears & bearings.
2—84" face x 28" dia.
2—88" face x 36" dia.
5—88" face x 48" dia. w/ace.
1—90" face x 18" dia. with A-F bearings.
13—90/ face x 48" dia. with gears & bearings.
1—104" face x 36" dia.
1—104" face x 48" dia.
1—110" face x 42" dia.
1—120" face x 42" dia.
1—124" face x 48" dia.
1—126" face x 48" dia.
17—127" face x 42" dia.
1—130" face x 48" dia.
1—138" face x 36" diameter.
2—160" face x 28" dia. with rope carriers.
10—160" face x 36" dia.
1—160" face x 42" dia.
14—160" face x 48" dia.

EMBOSSERS
1—80" Hudson Sharp A.F. Bearing equipped. Complete w/spare set rolls.

EXTRACTOR ROLLS—PLAIN & SUCTION
2—Dowingtown 24" diameter x 128" face, A.F. brgs. with 19" diameter rubber top roll & complete frame work.
1—Extractor roll section—Complete 1—22" dia. x 136" face suction extractor roll; 1—24" x 134" plain extractor with 18" x 136" R.C. couch roll.

FILTERS
1—Oliver continuous filter, cylinder 8 ft. diameter x 10 ft. face, steel vat. Used 2 months.

FLAT SCREENS
1—Impco 10 Plate—Dunbar drive, bronze vat.
1—12 plate Sandy Hill, Roller Shoe.
1—Bird Johnson S. S. screen 2 H.P. motor.

JORDANS
1—Appleton #2 anti-friction bearings.
1—E. D. Jones pony Jordans S. S. fillings.
1—Smith & Winchester with granite filling.
2—E. D. Jones standard with A. F. bearings.
1—E. D. Jones #4 (Imperial) with A. F. brg.
2—Shartle #1 Miami.

LABORATORY EQUIPMENT
Valley Iron Wks. pulp test equipment consisting of couch roll, sheet mould, hydraulic press, hot plate with boiler. Like new condition.

MOTORS
12—125 H.P. West. syn. 440/3/60/720 R.P.M.
1—300 H.P. West. 388 RPM, 440-3-60.
1—GE 350 H.P. syn. 3/60/2200—720 R.P.M.
3—GE 150 H.P. 3/60/440—435 R.P.M.
3—GE 100 H.P. 3/60/440—435 R.P.M.
1—GE 100 H.P. 3/60/440 695 R.P.M.

PULP EQUIPMENT
3—2 ft. x 8 ft. type Tyler screens.
1—Jones pulp screen. Cylinder 40" dia. x 83".

PUMPS
44—Centrifugal Pumps open & closed impellers.

REELS
1—Kohler 100" 2 arm unwind Reel. Accomodates 60" dia. rolls. Completely automatic. Equipped with splicer. New condition.

REFINERS
1—34" Southerland disc refiner, late model.
1—24" Dowingtown Weiner refiner. New.
1—Diltz classifiner w/spare discs.
3—#1 Clafin Refiners. Anti friction bearing.

ROLLS—PRESS, COUCH, CALENDER, ETC.
350 misc. rolls. Inquiries invited.
24—153" face x 5" dia. S.S. table rolls.
7—R.C. Couch 18" dia. x 132" face wth brgs.
4—Sets primary presses 12", 14" & 16" dia. x 128" face. Bottom rolls bronze. Top rolls R.C.
3—Sets main presses 22" dia. x 129" face. Top rolls stonite or bronze bottom rolls R.C. Complete with frames, brgs. & drives.
1—Set B. and C. Crownless deflectionless main press rolls 22" dia. x 128" face R.C. Complete with A.F. brgs, framing, Foxboro Controls & rt. angle drive with clutch & pulley.
1—Set Smoothing Presses, 202" face. Top roll RC 26" diameter, Bottom Roll Chrome plated 24" diameter. Complete with stands, etc.

ROTARY SCREENS
3—#2A Bird with copper vats.
4—#3A Bird Model 100. All non-ferrous.
12—3A Model 100 Bird S. S. or copper vats, Inconel screen plates. Like new condition.
2—Brd 2A Model 100 complete wth 2 motors.
1—Jones 40" #2 Rotary Screen.

SAVEALLS
1—Bird #6 Saveall complete with couch.

SHEETERS
1—B.C. 80" heavy duty Duplex board sheeter with 6 roll backstand and two Reeves drives.
1—Beck 54" with layboy and backstand.
1—Cameron 124" quick change slitter assembly.
1—Dowingtown 124" heavy-duty duplex board cutter.
1—Hamblet 55" with 3 roll back stand.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 110" single knife sheeters.
1—M & W 80" with layboy.
1—M.&W. 114" Sngle Knfe wth Layboy.
1—Kidder 65" Spot Sheeter with elec. eye.
1—Hamblet 71" single knife with layboy & roll backstand.

SHREDDERS
2—Mitts Merrill air fluff paper shredders.
1—Taylor Stiles giant stock Shredders, style 36.

SLITTERS & WINDERS
2—Shultz 12" coreless rewind.
1—Schultz 18" automatic with motor.
1—Fales 40" Model B and 1½" knfe set-ups.
2—Essex 42" center wind—30" diameter duplex.
3—Cameron 42" model 6.
1—Cameron 52" Model 24-3A, duplex rewind.
1—Langston 60" Shear Cut Slitters.
1—Hudson Sharp 60"—for plastic coated papers.
1—Cameron 62" Model 6-30" rewind.
2—Cameron 62" Model 6. 24" rewind.
1—Hudson-Sharp 72" high speed automatic wax roll and tissue roll converter.
1—Cameron 72" model 10—14 heavy-duty—60" rewind.
1—Cameron 92" model 18—60" rewind.
1—Cameron 162" model 19-42" Rewind.
1—Cameron 194" model 19, anti-friction bearing, 2800 FPM. Equipped with air operated quick change, constant tension and roll ejector.
1—Cameron 42" 24-7 Duplex, w/constant tension backstand, elec. eye & 5 h.p. Reliance Drive.
1—Johnstone 54" Duplex with constant tension backstand, elec. eye & 5 h.p. Reliance Drive.
1—Hudson Sharp 60" Wax Paper.
1—Hudson Sharp 48" Wax Paper.
1—Cameron 30" Model 6 w/motor.
1—Cameron 42" Model 40-1A—22" rewind.

STEAM JOINTS
40—Shartle Bros. steam jonts.

STEAM TURBINE
1—De Laval 100 H.P. Complete incl. reducer, governor, etc. Ratio 11.66—1.

SUCTION BOXES
3—Cast Aluminum for 190" wire—can be cut down
6—Brass for 94" wire.

SUCTION COUCH ROLLS
1—Sandusky 22" diameter x 135" drilled face.
1—Sandusky 18" diameter x 116" drilled face.
1—Sandusky 25" diameter x 122" drilled face.
1—Sandusky 18" diameter x 122" drilled face.
1—Millspaugh 30" diameter x 192" drilled face.
1—Sandusky 94" drilled face x 18" dia.
1—Sandusky 98" drilled face x 18" dia.

SUCTION PRESS ROLLS
1—Millspaugh 30" dia. x 194" drilled face.

SUPER CALENDERS
1—Norwood 30" 5 roll complete with motor drives.

THICKENER
1—Thickener, cylinder 72" face x 36" dia. Complete with R.C. Couch.

TRIMMERS—POWER BACK GAUGES
1—Seybold 84"—Dayton with motor.
1—Seybold 72" 20th Century.
1—Seybold 45" model 10 Z.
1—Seybold 56" Dayton with motor.
1—Seybold 74" 20th Century rebuilt.

VACUUM PUMPS
1—Nash #6 Hytor.
1—Nash #8 Hytor.

VOITH INLETS
2—Valley Iron Voth Inlets, 86"—Brass lip.
1—Valley Iron Works inlet—106"
1—New Valley Iron Works 156" x 36" monel lined inlet and head box.
1—Bagley and Sewall 144" stainless steel clad high speed inlet and head box.

YANKEE DRYERS
1—Beloit 10' diameter x 132" face 35 #S.P.
1—Beloit 12' diameter x 140" face 75 #S.P.

WAXERS & COATERS
1—Mayer 65" complete with drive.
2—Mayer 60" complete with motor.
1—Mayer 48" complete with motor.

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Long established midwestern paperboard mill has opening for technically trained man with experience with combination paperboards for research and development. Excellent opportunity for advancement.

Please send complete resume of education and experience to box No. 57-288 c/o Paper Trade Journal. O-14

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FOR SALE

38" Dexter Power Cutter.
24—Roll Hamblet Backstand.
54" Seybold Cutter.
34" Challenge Diamond Power Cutter.
44", 54", 62" Hamblet Sheeters.
Layboys & Backstands.
42" and 62" Cameron Slitters.
36" Waldron 2-drum Reel.

and many other items

Thomas W. Hall Co.,
Stamford, Conn.
TF

FOR SALE

84"—Dilts Waxer—late model. 31"—Wolverine aniline press—2 colors. 60"—Wolverine Aniline press—1 color. 42"—Hudson Sharp—aniline press—4 colors. 46"—Kidder oil ink press—2 colors adjustable cutoff. 40"—Kidder oil ink press—3 col—30" circumference. 64"-74"-84" Seybold — Dayton — 20 Century. 10Z. 40"—asphalt Laminating machine. waterproof papers. 138"—Moore & White duplex left-hand sheeter.

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2612 Grand Central Terminal Building
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O-14

FOR SALE — ALL MAKES, MODELS, SIZES: Slitters & Rewinders; Sheeters; Coaters; Waxers; Die Cutters; Embossers; Printers; Laminators; Paper Box Equip. WRITE FOR "USED MACHINERY LISTINGS." We BUY and SELL Single Units or Complete Plants. GREGGORY INC., 203 N. Wabash Ave., Chicago, Ill. TF

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Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

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Wanted

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Job Lots of Paper & Paperboard

We need a substantial supply of odd lots, side rolls, obsolete, surplus, or damaged lots of paper. Will buy all grades, any quantity. MELROSE PAPER CO., INC., 208 Walnut St., Philadelphia 6, Pa. Market 7-0800. TF

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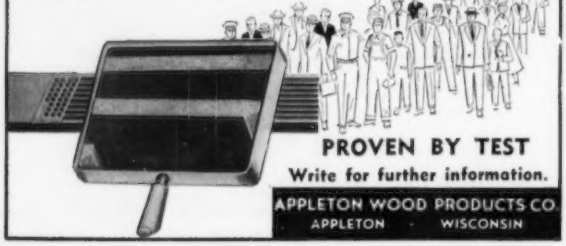

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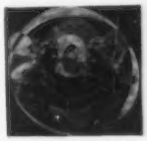
These handsome cards are UNICEF cards. UNICEF is the United Nations Children's Fund. The money you spend for these cards helps UNICEF protect the world's unfortunate children from hunger and disease. It is helping 45,000,000 children this year, but 600,000,000 need help.

Every dollar's profit from the sale of the cards protects two children from blindness. A dollar gives seventy children a glass of milk every day for a week. A dollar protects one hundred youngsters against tuberculosis.

Send UNICEF cards and the happiness you spread at Christmastime extends to the farthest corners of the earth.



"Brothers"—symbolizing the unity of man—by Hans Erni

"Community of Man"—also symbolizing the unity of man—by Hans Erni

"Sewing"—by Vietnamese artist, Mai-Thu

"Carol Singers"—North America—by Ludwig Bemelmans

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Greeting cards carry "Season's Greetings" in the five official U.N. languages. Note cards (same design) are blank inside. For an additional 40¢ a box, your name is imprinted on Greeting cards . . . on the Note cards "Merry Christmas and/or Happy New Year" with name. Minimum imprint order, 10 boxes of any one assortment.

UNICEF Greeting Card Fund, United Nations, New York, N. Y.

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( ) Boxes Gladys R. Davis		
( ) Boxes Erni "Brothers"		
( ) Boxes Erni "Community"		
( ) With name imprinted on Greeting cards as you wish it to appear		

Name

( ) With name and "Merry Christmas—Happy New Year" on Note cards

Name

Address

City Zone State

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A

Abbey Paper Stock Co. .... —
Acme Steel Company .... —
Adell Chemical Co. 24
Albany Felt Co. ....Bet. 34 & 35
Allegheny Instrument .... —
Allegany Ludlum Steel Corp. .. 59
Allis-Chalmers Mfg. Co. 9
Aluminum Co. of America 32
Aluminium Ltd. Sales, Inc. .... —
American Bitumuls & Asphalt Co. .... —
American Cyanamid Co., Dyes Dept. .... —
American Cyanamid Co., Paper Chemicals Dept. .... —
American Cyanamid Co., Pigments Dept. .... —
American Industrial Clays .... —
American Potash & Chem. Corp. —
American S. F. Products .... —
American Steel & Wire Co. .... —
Ames Company .... —
Annin Co. .... —
Antara Chemicals, Sales Div. Gen. Aniline & Film Corp.. —
Apmew, Inc. .... —
Appleton Machine Co., The Fac. 34
Appleton Wire Works 10
Appleton Wood Products Co. 92
Armco Drainage & Metal Products 85
Armco Steel Corp. 79
Armstrong Machine Works .... —
Asten-Hill Mfg. Co. .... —

B

Babcock & Wilcox Co. 35
Bahr Bros. Mfg. Co. .... —
Bailey Meter Co. .... —
Baltimore & Ohio R. R. .... —
Bauer Bros. Co. 19
Becco Chemical Div. Food Machy. & Chem. Corp. 13
Beloit Iron Works Co. .... —
Bird Machine Co. 43
Bixby, R. W., Inc. .... —
Black-Clawson Co. 84
Blaw-Knox Company 6
Boler Petroleum Co. .... —
Bolton & Sons, Inc. ....3 & 92
Borden Co. ....61 & 95
Bowsher Co., N. P. .... —
Brandon Sales, Inc. .... —
Bristol Company .... —
Brown Co. .... —
Brown & Root, Inc. 12
Buckeye Cellulose Corp. .... —
Buell Engineering Co. 18
Buffalo Forge Co. 33
Buffalo Pumps, Inc. .... —

C

Cady, E. J., & Co. .... —
Cambridge Instrument Co. .... —
Cameron Machine Co. .... —
Carthage Machine Co. .... —
Cascade Mfg. Co. .... —
Central National Corp. .... —
Ciba Company .... —
Cities Service Oil Co. .... —
Clark-Aiken Company .... —
Classified Advertising 88
Clearing House 88
Coe Manufacturing Co. .... —
Columbia Cellulose .... —
Columbia-Geneva Steel Div., U. S. Steel Corp. 87
Columbia-Southern Chem. Corp. Sub. of Pittsburgh Plate Glass Co. .... —
Combustion Engrg. Co. .... —
Corn Products Sales Co. .... —
Crane Co. .... —
Crucible Steel Corp. of America 30
Curtiss-Wright Corp. 22

D

Davis, Frank H., Co. .... —
Day, J. H., Company .... —
DeZurik Shower Co. 87
Diamond Alkali Co. 23
Dicalite Div., Great Lakes Carbon Corp. .... —
Dierks Paper Co. .... —
Dilts Machine Works .... —
Dodge Mfg. Co. .... —
Dorr-Oliver 16
Dow Chemical Co. 77
Dow Corning Corp. .... —
Dowell, Inc. .... —
Draper Bros. Co. .... —
Dryden Paper Co., Ltd. .... —
du Pont, E. I., de Nemours & Co., Dyestuffs Dept. .... —
du Pont, E. I., de Nemours & Co., Electrochemical Dept. 20
du Pont, E. I., de Nemours & Co., Pigments Dept. .... —

E

East Texas Pulp & Paper Co. .. —
Eaton Manufacturing Co. .... —
Ebasco Services, Inc. .... —
Egan, Frank W., & Co. .....Fac. 35
Eichleay Corp. .... —
Electric Eye & Equipt. Co. 27
Elixman Paper Core Co. .... —
Elliott Company .... —
Elwell Parker Elec. Co. .... —
English China Clays Sales Corp. 82
Extremultus, Inc. .... —

F

Fairbanks, Morse & Co. .... —
Falk Corporation 28
Farrel-Birmingham Co., Inc. .... —
Fitchburg Screen Plate Co. 86
Fluor Products Corp. 7
Foxboro Co. .... —
Frederick Iron & Steel Co. .... —

G

Gates Rubber Company 17
Garlock Packing Co. .... —
Geigy Dyestuffs Div., Geigy Chemicals Corp. .... —
General Dyestuffs Co. 47
General Electric Co. .... —
Gibbs-Brower Co. 88
Gilbert & Nash Co. .... —
Glidden Company 15
Goodrich Chemical Co. .... —
Goodrich Industrial Products Co. —
Goodyear Tire & Rubber Co. .. —
Gottesman & Co. .... —
Graver Tank & Mfg. Co. .... —
Grinnell Co., The .... —
Gulf Oil Corporation .... —
Gulf States Paper Corp. 11
Gurley, W. & L. E. .... —

H

Hagan Chemicals & Controls Corp. .... —
Hall, Thomas W., Inc. 92
Hamblet Machine Co. .... —
Harbison-Walker Refractories .. 25
Hendrick Mfg. Co. 87
Hercules Powder Co. .... —
Homestead Valve Mfg. Co. .... —
Hooker Electrochemical Co. .. —
Huber, J. M., Corp. .... —
Hudson Sharp Machine Co. .... —
Hungerford & Terry, Inc. .... —
Huyck, F. C., & Sons .... —

I

Improved Machinery, Inc. .... —
Inhico, Inc. .... —
International Wire Works .... —

J

Jefferson Chem. Co. .... —
Jenkins Brothers 36
Jenkins, M. W., Inc. 84
Johns-Manville Corp. .... —
Johnson Corp., The .... —
Johnson, Alvin H., & Co. 78
Jones, E. D., & Sons Co. 76

K

Kalamazoo Tank & Silo Co. .... —
Kidder Press Co. .... —
Knox Woolen Co. 80
Koppers Company .... —

L

Langston, Samuel M., Co. .... —
Link-Belt Co. .... —
Lobdell United Co. .... —
Lockport Felt Co. .... —
Lockwood Greene .... —
Lodding Engineering .... —
Lukens Steel Co. .... —
Lummus Company .... —
Lunkenheimer Co. 86
Lyddon & Co. .... —

M

Magnus Metal Co. .... —
Magnaflux Corp. .... —
Magnuson Products Corp. .... —
Main, Charles T., Inc. 80
Manchester Machine Co. .... —
Marathon Elec. Motor Corp. .... —
Mead Pulp Sales, Inc. ..Back Cover
Merrick Scale Co. .... —
Metallizing Engrg. Co. .... —
Minerals & Chemicals Corp. .. —
Minneapolis-Honeywell Reg. Co. —
Monsanto Chemical Co. Plastics Div. .... —
Montague Machine .... —
Moore & White Co. .... —
Morden Machines Co. .... —
Murray, D. J., Mfg. Co. .... —

N

Nash Engineering Co. .... —
National Aluminate Co. .... —
National Starch Products, Inc... —
National Tube Div., U. S. Steel Corp. 87
Nelson Company .... —
New Jersey Zinc Co. .... —
Nopco Chemical Co. 29
Northeastern Paper Sales, Inc. —
Norton Co. .... —

O

Oakite Products, Inc. 83
Ohio Injector Co. 2
Olin Mathieson Chem. Corp. .. —
Osborne Paper Mill Equipt. Corp. .... —

P

Paper Converting Machine Co.. 85
Parsons & Whittemore .... —
Patterson Fd. & Mch. Co. .... —
Patton Mfg. Co. .... —
Penick & Ford, Ltd. 14
Perkins, B. F., & Sons, Inc. .. —
Perkins Goodwin Co. .... —
Personnel Service Associates ... 92
Phillips Co., Thomas 89
Pioneer Paper Stock Co. .... —
Pittsburgh Piping & Equip. .... —
Poirier Control Co. .... —
Potdevin Machine Co. 84
Powell Valves .... —
Price & Pierce, Ltd. .... —
Pusey & Jones Corp. .... —

R

Railway Supply & Mfg. Co. 8
Raymond, Chas. P., Service, Inc. —
Rayonier, Inc. .... —
Read Standard Corp. .... —
Ready-Power Co. .... —
Record Fdy. & Mch. Co. 84
Reliance Elec. & Engrg. Co. .... —
Rem-Cru Titanium Inc. .... —
Restigouche Corp. .... —
Rice Barton Corp. .... —
Riedel, Gus & Son .... —
Riegel Paper Corp. .... —
Rogers, Sam'l. C., & Co. .... —
Rohm & Haas Co. .... —
Ronningen-Petter Co. .... —
Roosevelt Paper Co. ....Front Cover
Ross, I. J., Co. .... —
Ross-Midwest Fulton Co. .... —
Ross Paper Machinery Co. ..90 & 91
Roy, Milton Co. .... —
Ruderman Machy. Exchange ... —
Rust Engineering Co. 81

S

Sandoz Chemical Works .... —
Sandwell & Co. .... —
Sandy Hill Iron & Brass Works —
Saran Lined Pipe Co. .... —
Scapa Dryers, Inc. 75
Seaboard Air Line R. R. Co. .. —
Shartle Bros. Machine Co. .... —
Sheffield Corp. .... —
Shell Chemical Corp. .... —
Shuler & Benninghofen 68
Sigmamotor Inc. .... —
Signode Steel Strapping Co. .... —
Sirrine, J. E., Co. .... —
Smidth, F. L., & Co. 21
Socony, Mobiloil .... —
Soderhamn Mch. Mfg. Co. .... —
Sonoco Products Co. .... —
Southworth Machine Co. .... —
Spraying Systems Co. .... —
Stadler Hurter & Co. .... —
Statement of Ownership 81
Stelcon Ind. Floors .... —
Stebbins Engrg. Co. .... —
Stein, Hall & Co. .... —
Stevens, Charles R., Inc. .... —
Stone & Webster Engrg. Corp. —
Stowe-Woodward, Inc. .... —
St. Regis Paper Co. 45
Sturtevant Div., Westinghouse Elec. Corp. .... —
Sunday, Geo. M., Assoc. 88
Sutherland Refiner Co. .... —
Swenson Evaporator Co. .... —
Swepco Tube Corp. .... —

T

Taylor Instrument Co.'s .... —
Taylor Stiles & Co. .... —
Tennessee Coal & Iron Co. 87
Tennessee Corp. .... —
Testing Machines 83
Texas Co. .... —
Texas Gulf Sulphur Co. .... —
Thiele Kaolin Co. .... —
Thomas Paper Stock Co. 82
Timken Roller Bearing Co. .... —
Titanium Pigment Corp. .... —
Torrington Co. .... —
Towmotor Corp. .... —
Tracerlab Inc. .... —
Trent Tube Co. .... —
Tyer Rubber Co. 4

U

United Carbon Co., Inc. 82
United Engrg. & Fdy. Co. 31
United Paper Machinery Corp... —
U. S. Industrial Chem. Co., Div. of National Distillers & Chem. Corp. .... —
U. S. Rubber Company .... —
United States Steel Export Co. 87
United States Steel Supply Co. 87
U. S. Steel Corp. 87

V

Valley Mfg. Co. .... —
Valley Iron Works .... —
Vanderbilt, R. T., Co. 38
Viking Instruments, Inc. .... —
Virginia Smelting Co. 26

W

Waldron, John, Corp. .... —
Wallace & Tiernan Inc. .... —
Walworth Co. .... —
Weber, H. G., & Co. 86
West End Chemical Div., Stauffer Chem. Div. 34
Westinghouse Elec. Corp. ...56 & 57
West Virginia Pulp & Paper Co. 82
Weyerhaeuser Timber Co. .... —
Whiting Corp. .... —
Wiggins Teape & Alex Pirie.. —
Williams-Gray Co. 84
Wisconsin Wire Works .... —
Woodpulp, Inc. .... —
Worthington Corp. 60
Wyandotte Chem. Corp. .... —
Wyatt Metal & Boiler Works . —

Y

Yale & Towne Mfg. Co. .... —
Yarnall-Waring Co. .... —

While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

BUSINESS STAFF

Arthur E. Gordon, Business Mgr.
Francis J. Gordon
15 West 47th Street, New York 36, N. Y. Plaza 7-2370
H. K. Vinton
CHICAGO 3, ILL.: Room 1020, 79 West Monroe St. CEntral 6-2784

Frederick B. Grosse Production Mgr.
Alrick Man
15 West 47th Street, New York 36, N. Y. Plaza 7-2370
H. L. Poulton
PITTSBURGH. 11, PA.: 610 Pennridge Road. Hemlock 1-1571

McDonald-Thompson Company
SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-0647
LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391
DENVER, 2, COLO.: 222 Colorado Nat'l Bank Bldg. KEystone 4-4669
SEATTLE, 4, WASH.: National Bldg.—ELliott 3767
HOUSTON, 6, TEXAS: Room 214, 3217 Montrose Blvd. JAckson 9-6711
TULSA 4, OKLAHOMA: 2010 So. Utica
MIAMI, FLORIDA: Hal Moore, Printup & Assoc., 1006 Langford Bldg. Phone:—FRanklin 9-2668. Georg J. Linder: Frankfurt am Main, Wittlesbacher Alle 60, Germany — Telefon 46372

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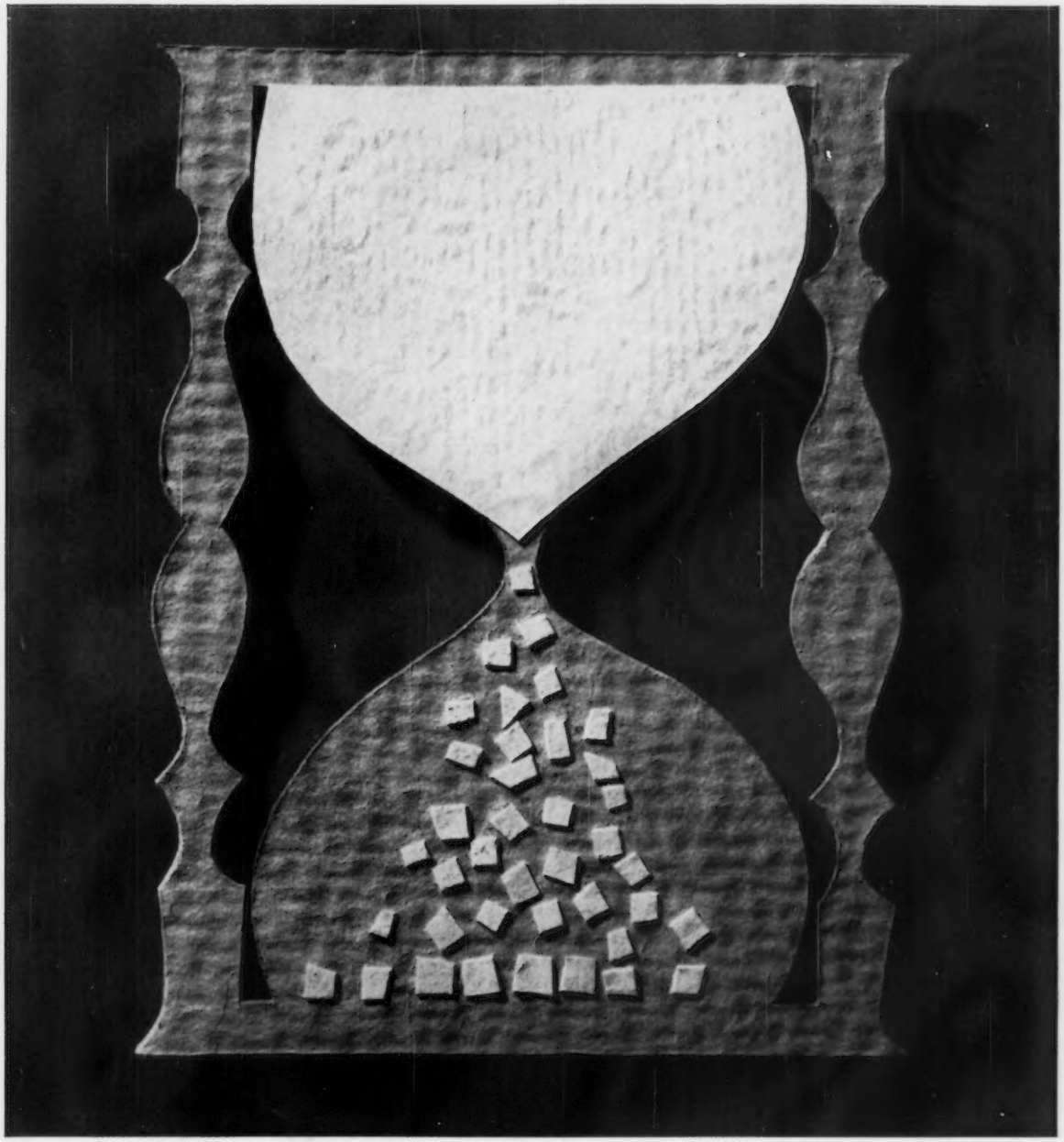

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